THE IRON AGE

THURSDAY, SEPTEMBER 10, 1891.

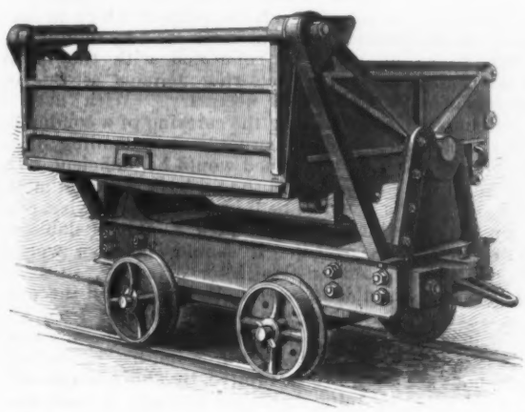
The Bradley Cinder Car.

The Laughlin and Junction Steel Company of Mingo Junction, Ohio, have had in use for over two years a cinder car designed by W. H. Bradley, superintendent of the plant. During that time it has needed practically no repairs. The chief feature of the car is its automatic dumping and righting, or return to the filling position. This is accomplished by means of the door, which is so arranged as to act as a lever to lift the body or box to its horizontal position. When closed the door rests on the bottom plate and serves as a stop to prevent the car body from tipping backward beyond a horizontal position when empty. A tight joint is thus formed between the door and body. The engravings show the tapping holes at the front and rear, which are used for liquid cinder. When the cars are intended for handling earth, gravel, ores, &c., the parts are made of wood, plate iron or other material.

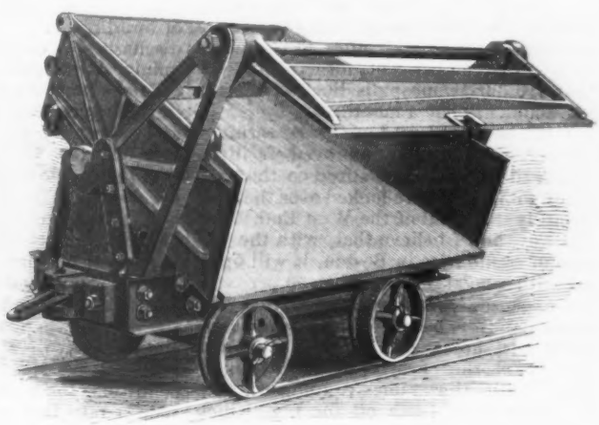
The car frame is composed of longitudinal beams, carrying the axles, and having at the ends upright standards provided with forked portions for the trunnions of the tipping car body. The body is constructed as clearly shown in the engravings, the trunnions being cast integral with and fixed to the ends of the body. Standards extend upward from the frames at the ends of the car, and the door is pivotally supported on these standards by trunnions. The door consists of a plate of proper shape to close the side of the car, and is provided at its upper end with a projecting arm, which is connected to the car body by a link. The operation is as follows:

Owing to the fact that the side of the car next the swinging door is wider than the other side, the center of gravity will be on the side next the door when the car is loaded. When loaded, the car is held from tipping by suitable restraining devices. When it is desired to tip the car, these restraining devices are loosened, and thereupon the car body will tip automatically on the trunnions into the inclined position shown in the left-hand engraving. When the body tips in this manner, the door, being upheld by the standards, does not move downwardly with the car body; but by the action of the link the door will be thrown open to permit the discharge of the load. As soon as the load is discharged the car body will automatically right itself and the door will resume its former vertical position at the side of the car, as shown in the right-hand view. This is due to the fact that because the door is supported by the car frame and not by the car body, the center of gravity of the car when empty is on the side of the trunnions next to the rear side of the car body, and the door, tending by gravity to resume a vertical position, will through the link exert on the car body an upward force, which tends to right it.

The advantage of making the car body longer at the side next to the door and tapering in length toward the other side is not only that it causes the center of gravity to be shifted when the car is loaded, but also that by affording a flaring discharge for the cinder the latter will free itself quickly and will not stick or adhere to the sides of the car.



Car Closed.



Car Open.

THE BRADLEY CINDER CAR.

Indications are now good for a peaceful settlement of the trouble existing between the iron manufacturers of the Mahoning and Shenango valleys and the Car Service Association controlling lines entering those places. The trouble arose over an attempt on the part of the railroads to compel the manufacturers to pay charges on all freight cars held over a certain length of time while unloading. These charges have been disputed by the manufacturers, and for some time it looked as though a legal battle of large proportions would be the result. At a joint meeting of the Mahoning and Shenango Valley Iron Manufacturers' Association and railroad officials, held at Youngstown on Wednesday, September 2, a committee was appointed to arrange with the iron manufacturers for the adjustment of car service rates. The committee will confer with J. G. Butler, Jr., L. E. Cochrane and W. E. Taylor, representing the iron men, and will report their conclusions at a meeting to be held not later than September 30. The conference will no doubt have an important bearing upon the future operations of the manufacturers.

The *Railroad Gazette* concludes an editorial discussion of the progress of compound locomotive building in this country as follows: "On the whole, then, we may say that the compound principle is being well and thoroughly tried in this country, and there is to-day, after such experiments as have already been performed, a decidedly increased confidence in the advantage of compounding where the engine is to be subjected to heavy work, but we cannot say that there is an increased confidence in the value of compounding for high speeds and light loads."

The Cost of Electric Traction.

The figures giving the cost of operation of the electric cars on the West End Street Railway in Boston, for the month of July, have just been compiled by the auditor and are here published in full. The report for July shows a decrease of $7965 in net earnings as against June, but an increase of $88,359 over April and $38,770 over May. The real point of West End earnings, says the Boston *News Bureau*, is to be found in the electric lines expense account. As the new power houses of the West End came into operation the result is seen in the reduced cost of motive power. In April and May the motive power for a horse car cost 10.86 cents per mile, while in June and July it could not be got lower than 10.38 cents. The motive power for an electric car has now been got down to 7 cents per car mile, and will be lower in future.

	Total.	Electric.	Horse.
Gross receipts	$554,431	$144,552	$409,878
General expenses	27,613	6,955	20,657
Track and car expenses	179,853	43,891	135,954
Motive power	142,670	26,398	116,271
Total operating expenses	350,137	77,249	272,888
Net earnings	204,294	67,303	136,990
Miles run	1,497,568	377,191	1,120,377
Ratio mileage	100.00	25.19	74.81
Per cent. operating expenses	63.15	53.44	66.58
	Cents.	Cents.	Cents.
Earnings per mile run	37.02	38.32	36.58
Expenses per mile run:			
Motive power	9.53	7.00	10.38
Car repairs	0.75	1.17	0.61
Damages	0.07	0.12	0.06
Conductors and drivers	7.91	6.92	8.23
Other expenses	5.12	5.37	5.07
Total expenses per mile run	23.38	20.48	24.35
Net earnings per mile run	13.64	17.84	12.23

In connection with these reports of the cost of electric traction on the Boston road, the following interview with Thos. Lowry, president of the St. Paul and Minneapolis street railways, will be of interest. Mr. Lowry's lines have lately ex-

changed their horse for electric equipment. What he says of the cost of operating electric cars is of especial interest. He says :

"I suppose it is a fact that we have at St. Paul and Minneapolis the biggest electric system in the world, and, moreover, everybody is perfectly satisfied with its operation. We hear nothing but praise. Here are to-day nearly 350,000 people, and not a horse car in either city. Minneapolis has 120 miles of street railway, all equipped with the overhead electric system, with posts set in the middle of the street and arms for the wires extending over the track on either side. St. Paul has 90 miles of street railway; 75 miles of it are in the electric system and 15 miles in cable, but we shall take up part of the cable road and supplant it with electricity, except where we have to mount a 17 per cent. grade. Here we must keep the cable in. One can now travel by our electric line from the north side of Minneapolis to St. Paul parks, over 20 miles, upon a transfer check. This, I think, is further than from the back side of East Boston to West Roxbury. I have just received from the West the first monthly report of the Minneapolis street railway system in which no horse account appears. It shows gross earnings for July of $107,571, and expenses of $52,585, and net earnings of $54,985. This shows expenses of less than 49 per cent. for operating, and I feel perfectly sure that within two years we shall be operating our entire electric system of 215 miles in two cities for less than 40 per cent. for expenses. A year ago our Minneapolis lines were earning about $70,000 a month.

"We have increased our gross earnings 50 per cent. by the improved facilities which the electric lines afford to the traveling public. I have looked over the June monthly statement of the West End Street Railway, and I believe that, with the volume of traffic here in Boston, it will operate with a good deal less than 50 per cent. for expenses when you have gotten your horse cars from between your electric cars. With the horse cars out of the way you can run nearly one-third more trips with the same equipment. We use principally Lima oil for fuel, which costs us $1 a barrel, most of it for transportation from Ohio. I think it takes about three barrels to make the equivalent of a ton of coal; but, at any rate, I figure that it costs us only $1 a day for power to run an electric car, where we are operating 150 cars in the system. Horses used to cost us $3.85 to $4 a day per car with our low-priced grain. I think it must cost the West End $5 per day for horses per horse car. You see that here is a great saving, and then there is the increased number of trips and the increase in the number of passengers carried, as the facilities are increased. All the people in the Northwest are enthusiastically in favor of the electric system. We have had every kind of power, and find in the winter the overhead electric is better to work through snow drifts than either steam, horse or cables, and we have tried them all.

"We have used electricity now for two years, and we think we know something about motor repairs and the general repair account, and we expect this account to diminish instead of increase. The principal item is the burning out of the armatures, but this becomes less as employees become more experienced and operations become systematized. The ratio of operating expenses on electric systems is downward, not upward. My report of this morning from Minneapolis covers 11 electric lines for July. The line of our heaviest traffic, 9½ miles, between Minneapolis and St. Paul, shows only 35 per cent. of a 5-cent fare as cost of operating. We run trains of two cars on this line, and we are going to run three cars as the traffic increases. The principal increase in expense will be the cost of a conductor, as we have a man on each car. I don't see why Boston expenses for the electric system cannot be got down to between 35 and 40 per cent. with its immense traffic."

Lightning Rods.

BY ELIHU THOMSON.

In the *Electrical World* we find an article by Elihu Thomson on the use of lightning rods and how best to arrange them. As the subject is one of vast interest to all, we quote as follows:

The following queries were sent out by one of the metropolitan journals:

Do lightning rods really afford any protection?

What is the nature of the electrical discharge?

What is the correct theory of its cause?

What is the correct theory of the action of lightning rods? Should they be insulated or not?

Does their effectiveness depend on their cross section or surface?

Do you agree with the ideas advanced by Mr. N. D. C. Hodges in his paper on this subject, read before the Institute of Electrial Engineers, April 21, and reprinted in part in the *Electrical World* of May 2?

In regard to the utility of lightning rods I think there can be no question that a properly constructed and arranged lightning rod will afford complete protection of buildings from the effects of lightning discharges. In the first place, in my opinion, the lightning rod, contrary to the opinions put forward and even advocated in the books, does not have any considerable effect in conducting off discharges from the clouds silently, for the reason that the development of the conditions of the discharge from the cloud to the earth is oftentimes too sudden to allow any rod or rods to effect this work of conduction in a silent manner. The cloud ordinarily during thunder storms is moving rapidly and the lightning strokes are found most frequently where the densest rain exists, and it is easy to see that a building may suddenly be drenched with rain and the conditions for a stroke brought about at such a rate that a lightning rod or rods could not ward off a discharge by conducting the electricity silently to the earth. In such cases what is more likely to happen is this, that the highly charged cloud existing over the neighborhood of the building provided with a rod will, if the conditions are favorable, suddenly discharge itself into the rod and the discharge be thus carried to ground. On the same reasoning it must be admitted that the presence of a lightning rod may, and perhaps often does, conduce to a building being struck by lightning, but it is much better to have the building struck a number of times without doing any harm than to run the risk of having it once struck while without any means of conduction of the current to the earth except through the poorly conducting portions of the building, which are almost sure to suffer injury or destruction.

I do not think that lightning rods are of much utility in the case of buildings which have metal pipes running from the ground up to the highest story and through the roof, especially if these pipes should extend to a considerable hight above the building or above the highest part of the building. In case the building has a metal roof with pipes running from the ground to the roof there is little liability of damage being done below the roof, but any chimney which projects above the roof might be struck and shattered. In such cases a connection from the pipe or metal of the roof to a short rod running up the chimney and extending above it a short distance would be advisable. Lightning rods are of but little use for buildings adjoining tall chimneys or church spires themselves provided with good lightning conductors. The actual area which is protected by a church spire provided with a lightning conductor has never been satisfactorily determined, but it is probably at least equal to that of a circle whose radius is equal to the hight of the spire or chimney above the top of the building to be protected.

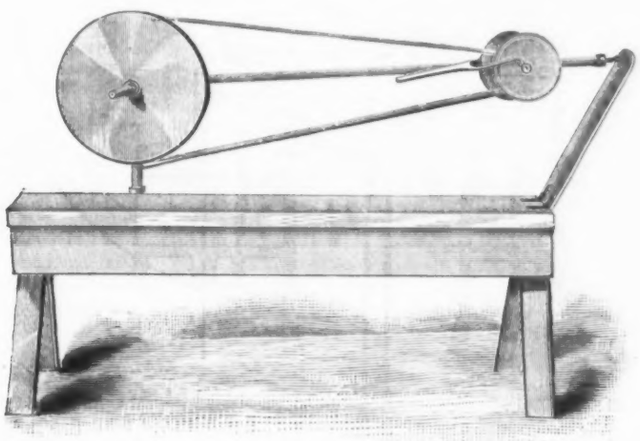
All that I have said in relation to the effectiveness of the lightning rod implies, of course, that it be properly put up—that is, put up with a knowledge of the conditions of the service which is to be had from it—and that it be thoroughly connected with the ground at its lower end. Merely running the end of the rod into the ground a short distance, as sometimes done, is by no means sufficient. A connection of the system to gas or water pipes generally furnishes a good ground. The running of the lower end of the rod, made of some metal which cannot be easily corroded, either into a pit or well filled with broken coke or tin scrap will make a good ground, provided the well is deep enough to be always in a moist state. A still better way is to fork the end of the rod into several branches which run away from the building and pass downward into several small pits or wells, with the conducting material, such as coke, iron borings, tin scrap or the like, placed in them.

The most perfect lightning protection is obtained when the building is virtually in a metallic cage, the parts of which in connection with the earth are very thoroughly grounded or connected with the moist stratum. Such thoroughness as this is, however, not necessary. With even a large building the carrying of a conductor down each corner and grounding it as above mentioned would be sufficient. Of course the rod should have sufficient metal in it not to be injured by the heaviest possible discharge which would be liable to pass over it. It should, in other words, be built with a factor of safety, so as to be able to carry to the ground all the current which could ever reach it from the clouds. I think it is pretty generally conceded that ½-inch iron rod has never been known to be injured by the passage of a lightning discharge through it, and that such rod conducts the discharge freely enough for the purpose. Experience, of course, is to be the teacher in this case. A lightning rod made of galvanized-iron pipe, say 1-inch pipe, used with the screw joints well secured and painted so as not to rust at the joints, would be about as good a conductor as could be desired. A flat strip of copper securely tacked to the building and running down its corners, the dimensions of the copper being, say, $\frac{1}{16}$ inch thick by 1½ inches wide, would also answer, and is in many respects a good form of conductor. If the metal aluminium becomes cheap enough I think an iron bar covered with this metal would be an excellent conductor on account of the small liability of the aluminium to rust.

Concerning the action of a lightning rod in saving a building from harm, this can be briefly stated to be the mere interposing of some good conductor in the path of the lightning discharge, so that the charge can be carried to earth, or the electric strain relieved, without the necessity for following poorer conductors, which, if traversed, would be torn to pieces or destroyed More scientifically, it may be stated to be the provision of a path or center of action for the discharge in the vicinity of the building of such a character that the discharge selects it in preference to forming a center of discharge or path for itself through the building, which may be made of materials not able to carry the discharge without destruction. The concentration of the energy of a discharge on ordinary building

material, such as wood, stones, brick or plaster, gives rise to destruction from the mere fact that these substances are not capable of conveying the energy without being highly heated. If wood be suddenly heated the watery vapor in it forms a gas and explodes it. The destructive effects, then, of the electrical discharge are due to expansion of gases, or the production of vapors within the material damaged.

Lightning rods need not be insulated from the building. It matters very little whether they are or are not insulated, as the ordinary provisions for insulation so far as a lightning discharge is concerned are practically *nil*. The insulation given to a lightning rod is frequently that which is not good enough for a telegraph line where the pressure of the current on the line may not exceed in all 200 volts, while in the lightning discharge the pressure may be many millions of volts. Where there are large masses of metal in a building it would do no harm as a rule to connect these masses to the ground as well as to the lightning rod; and it may be said also that where a building is filled with masses of metal or machinery, damage from lightning could be largely obviated by connecting the various masses of the metal one to the other and to the ground.



THE ANTHES STRAP COVERING MACHINE.

It is not, however, essential that they be actually connected to the ground; for if a mass of metal in the building is but slightly separated from the ground wire by what is known as a discharge space, it will be quite sufficient to allow lightning to pass. A slight opening between two parts of a conductor constitutes a discharge space. Such discharge spaces and protective arrangements are used commonly on telegraph and telephone lines, in which the lines, although they are not connected to earth at each instrument, may be so near the earth by the provision of a discharge space between the line and earth that they are practically connected.

The effectiveness of lightning rods depends, I think, not alone upon their cross section nor alone upon their surface. It is as much a mechanical as an electrical question. There needs to be a sufficient cross section of metal not to be melted by any discharge, and it is best that the metal be made in the form of a pipe or flat strip, since the tendency of the lightning discharge is to follow the surface portion of the conductor. This is due to the fact that it is an extremely quick discharge and may take upon itself an oscillating character. This means that each spark which connects earth and cloud is not a stream of something running in one direction, but merely a core or axis for a set of disturbances or reliefs of pressure which may act alternately in opposite directions during the short intervals through which the flash lasts. The oscillating action may be illustrated by fastening the end of a thin steel rod and bending it by carrying the free end to one side. This if let go will be followed by a series of oscillations made very quickly, but which are akin to oscillations of a pendulum. The relief of electrical pressure is in lightning so sudden as to result in the action of relief going too far, after which a relief in the opposite direction ensues, back and forth, until all of the energy of the discharge has been used up in the form of light and heat.

This must not be confounded with the action which often occurs during thunder storms, when two, three or more separate discharges are visible separately to the eye, and follow down the same path or the track which has been opened by the first discharge. This is a phenomenon common enough and easily observed, but it has no relation to the oscillations of a single lightning discharge. These oscillations, if they exist at all, are in periods inconceivably small, and therefore are not to be discovered by the unassisted eye. Neither do I wish to be understood as subscribing to the opinion that all lightning discharges are oscillating in character. I am convinced from my own observation that very many lightning discharges, particularly those which pass over great lengths of clouds, are more apt to be discharges of some duration. Observation over a long period of years has led me to think that it may be possible that the discharges in some instances have a measurable rate of progress from cloud to cloud and perhaps to earth. The photographic plate, which is being more and more applied to the study of lightning discharges, will some day resolve this doubt.

The Westinghouse Interests.

The annual meeting of the stockholders of the Union Switch and Signal Company of Pittsburgh will be held in that city on Wednesday, September 16 next. In his annual report to the stockholders E. H. Goodman, president of the company, speaks as follows: "The Board of Directors respectfully represent to the stockholders of this company that it is greatly to their interest that the sale heretofore made to the Westinghouse Electric Company of its property shall be ratified and consummated, there still remaining in the hands of the electric company a large amount of the purchase money due and unpaid, which the interests of the company require the payment of."

A large stockholder who is familiar with the affairs of both the Union Switch and Signal Company and the Westinghouse Electric and Mfg. Company has given the following statement for publication: "$100,000 was paid the Union Switch and Signal Company by the Westinghouse Electric Company, leaving $75,000 remaining unpaid. This amount has been drawing 6 per cent. interest since 1886, making the difference at present about $100,000. This sum is expected to come from the Reorganization Committee of the Westinghouse Electric and Mfg. Company, which will give the electric company a clear title to the property. When the Union Switch and Signal Company bought the property, plant, &c., 6 per cent. bonds to the extent of $350,000 were issued, of which the Westinghouse Air Brake Company took $296,000 and the remaining $54,000 were disposed of in speculative circles. Interest on these bonds to the extent of $100,000, due on the holdings of the Westinghouse Air Brake Company, has not been paid. By the adoption of the resolutions drawn up by the Union Switch and Signal Company, the company will be able to pay up its back interest to the air brake company."

Strap Covering Machine.

This machine is intended to serve as a form on which to stretch endless polishing belts while applying a coat of emery or quartz. The machine is operated by grasping the belt with the left hand and causing it to travel around the pulley while the glue is applied with the right hand. During this operation the pulley rests on a support, as shown in the cut. The handles on both sides of the large pulley are then grasped and the belt rolled —not dragged—through the trough or box of emery, precisely as in "setting up" a leather covered polishing wheel. The emery is pressed into the glue before it sets, and the coating procured is more even and durable than that obtained by sprinkling the emery on the glue. This machine is made by Cutter & Wood, of 131 Pearl street, Boston.

Growth in the Northwest.

A Detroit paper makes an interesting comparison of statistics of population, showing how slow is the growth of Canada when contrasted with the rapid development of the neighboring States: The total population of the Dominion is 4,823,344, an increase of 498,534 in the ten years since the last census. In the same period the State of Michigan, which has a total population of 2,093,889, has increased 456,952, which is a total increase nearly as great as that of the whole Dominion and a proportionate increase many times greater. Ontario is much larger than Michigan. It is the richest of the provinces, and yet the "crown jewel" of the boasted British empire springing up in the north falls far behind the adjacent American territory subject to the same climatic conditions and in other essential respects possessing no superior advantages.

The following figures give the details of how the State has outstripped the province in the 20 years. The censuses are taken by ten-year periods in each country. In this table the Ontario figures are for the censuses of 1871, 1881 and 1891 and the Michigan figures for the censuses of 1870, 1880 and 1890:

	1870-1.	1880-1.	1890-1.
Ontario	1,620,851	1,926,922	2,112,989
Michigan	1,184,282	1,636,937	2,093,889
Ontario's excess.	436,569	289,985	19,100

Comparing the Canadian Northwest with the new American States across the boundary line the contrast is not less

striking: In 1880 Washington, Montana and North Dakota had 151,184 people, only 14,000 more in round numbers than the neighboring provinces. Now they have 663,714, an increase of 512,526. The relative increase of the two regions readily appears in the following table:

	Increase.		Increase.
Washington	274,400	British Columbia	43,308
		Assiniboine	
Montana	92,610	Alberta	61,487
		Saskatchewan	
North Dakata	145,516	Manitoba	92,182

The Northern Pacific crosses the States of North Dakota, Montana and Washington, and the Canadian Pacific crosses, in the same degrees of longitude, Manitoba, British Columbia and the Northwestern Provinces. To account for the difference in material progress, therefore, it is necessary to look for something beyond merely geographical distinctions and isothermal lines.

Hydraulic Pumping Engine.

From the proceedings of the Institution of Civil Engineers we take the following description of a hydraulic pumping engine designed by the author, H. D. Pearsall, and made in England for the Isabella Furnace, Chester County, Pa., where it is now at work:

This engine is the second constructed upon this principle, the first having been erected at St. Mary Cray, Kent, chiefly for experimental purposes. Accurate tests of efficiency have been made in both cases, and the results are quoted below.

As in the hydraulic ram, the pumping power is obtained by the arrest of a column of water which has been previously set in motion by the force of gravitation, and the duty obtained demonstrates that this principle may be safely and advantageously employed much more largely than hitherto. The blow or concussion generally supposed to be a necssary concomitant of machines of this type is entirely avoided, and the action made equal in smoothness to that of the best class of reciprocating pumps, not only without interfering with the efficiency, but with the result of increasing it. This being the case, engines of such a type have the obvious advantage, as compared with a combination of turbines and pumps, that the energy available is utilized directly, without being first transformed into rotary motion, and from that by a second conversion into the form in which it is required, and the undesirable combination of a fast-moving engine, such as a turbine, driving a slow-moving machine, such as a reciprocating pump, is avoided. An efficiency considerably higher than any hitherto attained in machinery of this kind was therefore to be expected, and, as will be seen by the tests, has been already realized.

Fig. 1 shows the construction of the engine at the Isabella Furnace. C is a pipe 1 foot in diameter from the head race to the engine. D is the main valve (more fully described below) actuated by the rod E and the cam F, and alternately opening and closing the annular opening G. H is a chamber above the main valve, the use of which is explained below. It has an equilibrium valve at J. K K are valves opening from the chamber H into the valve chamber L, which communicates with an air vessel by the pipe M. A small motor of ordinary construction, not shown in the figure, turns the shaft O and cam F, and thus opens and closes the main valve D.

The action of the engine is as follows: The shaft O is turned by the motor at a speed of about 25 revolutions per minute, and by means of the cam F actuates the main valve D, and alternately opens and closes the orifice G at regular intervals. Immediately the orifice G is opened the water flows in the pipe C, escaping freely into the tail race until by the continued revolution of the shaft O the cam again closes G. During the closing, however, which takes place quite slowly, some water rises in the chamber H, driving out the air, which escapes from the chamber through the valve J. This action is one principal object of the chamber H, and helps more than any other feature of the engine to make it possible to utilize the principle of the hydraulic ram without violence on the one hand or loss of efficiency on the other. It is obviously objectionable to have to close the valve very quickly; while the slower it is done, but for the function performed by the chamber H and valve J, the greater is the loss which results from checking the flow of the water. But as, by this construction, a second way is open to it during the shutting of the main valve, the current is not impeded, and the valve may be closed as slowly as is convenient without any loss from this cause.

The annular sliding valve D is peculiar in that its closing is completed by a slight movement of the seat P, which consists of a rubber ring in the form of a curtain. The valve is moved up to, but not quite touching it. Immediately there is any internal pressure the edge of the rubber curtain is forced against the valve, and so completes its closing. This arrangement has, in addition to the advantage of durability, that of not being injured by sticks or floating rubbish if such should be brought down by the water. Almost immediately after the closing of the main valve, the water, still rising in the chamber, reaches the lower edge *a* of the tube *b*, up which it flows, touches the float *c* attached to the air valve J and closes it. The momentum of the column of water then compresses the small quantity of air contained in the chamber H above the lower edge of the tube *b*, opens the valves K K, and forces into the valve chamber L (and thence into the air vessel) first the air and then some of the water following it. Having thus expended its energy the water comes to rest. The valves K K then close. After this has occurred the continued revolution of the shaft O and its cam F reopens the main valve D. The flow in the pipe C recommences, and at the same time the water in the chamber H also escapes into the tail race through the same opening, atmospheric air entering through the air valve J, which falls open as soon as the high pressure ceases. This completes the cycle of operations, the delivery of water at high pressure from the air vessel being continuous.

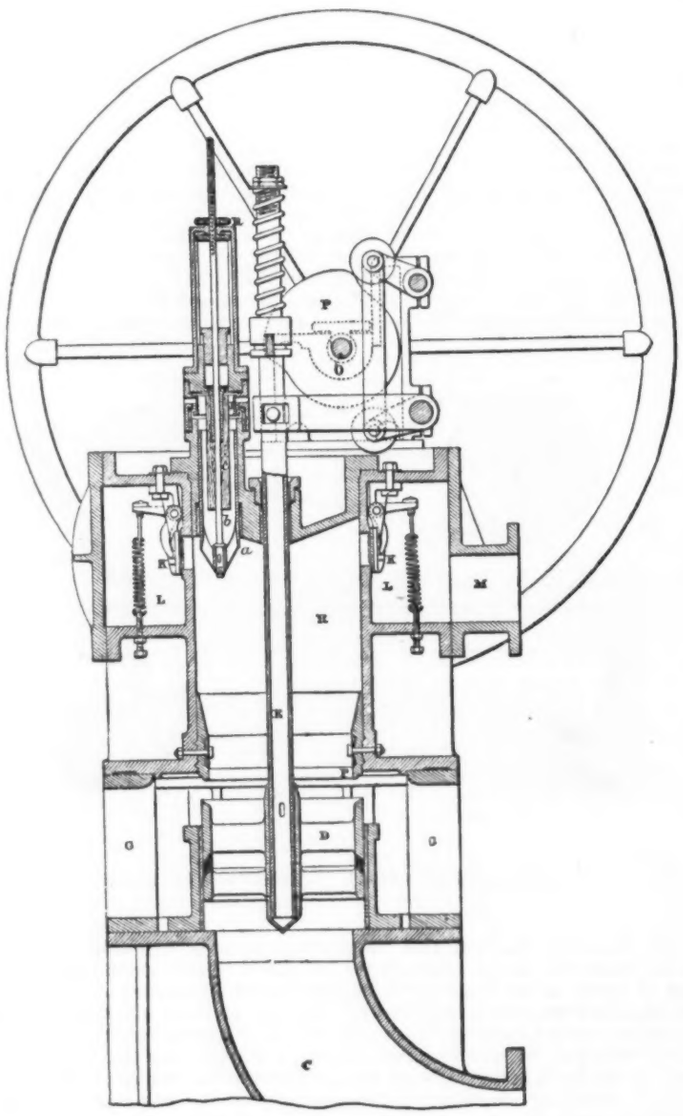


Fig. 1.—Vertical Sectional Elevation.

HYDRAULIC PUMPING ENGINE.

In order to ascertain whether there is any violence of action in the pipes and the chamber, a tube was fitted into the chamber H, and a steam-engine indicator attached, the barrel of the indicator being driven from the crankshaft. A pressure equal to the pumping head. This is easily done in a few revolutions of the engine, the dipping tube b being first adjusted to its lowest position, which is about 6 inches below that shown in the drawing. The effect of so doing is to confine a considerable quantity of air in the ante-chamber instead of the small amount required by the motor, so that the pressure rises with each stroke and rapidly becomes sufficient for working.

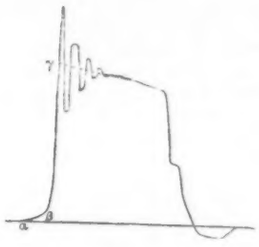


Fig. 2.

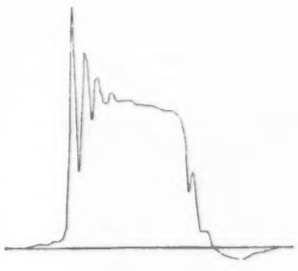


Fig. 3.

Cray Engine Pumping at 30 Pounds per Square Inch.

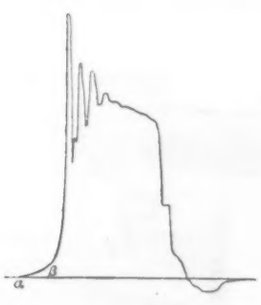


Fig. 4.—Cray Engine Pumping at 35 Pounds per Square Inch.

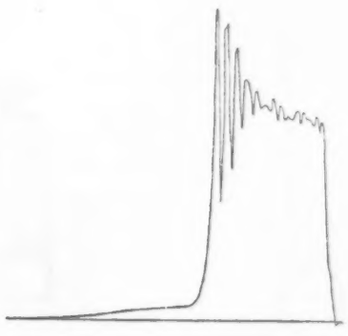


Fig. 5.—Barneston Engine Pumping to Reservoir.

great many diagrams were taken, some of which accompany this paper, Figs. 2, 3, 4 and 5; the point α corresponds with the time of shutting off the 12-inch valve. From α to β the pressure rises a little during the escape of air through the passage, and further increases from β to γ during the compression of the air left in the chamber, which thus forms a cushion. It will be seen that the pressure usually rises to about 2 pounds more than the resistance in the rising main. This is just about the difference due to the velocity at which the water passes the delivery valves. The marks above γ are obviously instrumental vibrations due to momentum of the indicator. As the velocity diminishes this pressure becomes less, showing a gradual closing of the delivery valves. After this has happened it almost immediately falls to zero, and in some cases to a little below. In the latter case there was apparently a slight recoil, but it was obviously very slight, as the air valve would not fall open when completely balanced. These diagrams prove the perfect smoothness of working, and entire absence of the blow which is frequently supposed to be a necessary accompaniment of machines on this principle.

The motor referred to is actuated by the small qualtiy of air which, as has been already mentioned, is compressed at each stroke and enters the air vessel with the water. The depth of the tube b dipping into the ante-chamber is easily regulated by the screw R, so that the quantity of air compressed may be made equal to the requirements of the motor. When the engine has been once set to work it can, of course, be stopped and started without any difficulty, but on first starting it is desirable to charge the air vessel to a

The ordinary work of this engine is pumping water to a reservoir 610 feet distant and 92.7 feet above the engine. It delivers a perfectly steady stream into the reservoir without any kind of concussion or water hammer effect, the only sound being that of the closing of the valves K. The water was carefully gauged over a weir constructed for the purpose by W. M. Potts of Pennsylvania for the proprietor of the Isabella Furnace, and both he and the author made many measurements, during several days, of the quantities used and delivered. Mr. Potts' report of the result is given in Table I. The quantity delivered according to the measurements made by the author was slightly in excess of that measured by Mr. Potts, being 130 American gallons, giving a net efficiency of 73.5 per cent.

Particulars of tests made on the engine at St. Mary Cray are given in Table II. The last column is the result of a recent test, and includes in the quantity of air compressed that used in the motor. As the proportion of power consumed in this way is, of course, greater for a small engine than for a large one, these figures are useful, as showing what may be expected in air compression on a larger scale. Deducting the air used in the motor the net efficiency was 76 per cent. The efficiency obtained was not quite so high as in the one described (it being of an earlier design), but the record is of some interest, as the measurements were made when it was compressing air as well as pumping water. In this case the efficiency is considerably higher than when simply pumping water, and it would probably be still greater if the engine were only compressing air. The reason of this is to be sought in the exceptionally favorable circumstances under which the action takes place. The whole interior surface of the compression chamber is cooled at every stroke by a mass of cold water acting as a piston, the movement of which is comparatively slow. The compression is consequently very nearly isothermal; repeated observations with thermometers placed in various positions failed to detect any rise of temperature.

As the engine was intended for the purpose of pumping water, and only incidentally as an air compressor to the extent necessary for charging the air vessel, the ante-chamber was not made large enough to contain sufficient air to absorb the whole power of the water column. This is why, in the record of experiments on efficiency in air compressing, pumping water still forms part of the work done.

Table I.—Measurement of the Efficiency of the Hydraulic Pumping Engine at Barneston.

The head of water—that is, the vertical distance from surface of water in dams to center of waste water discharge of engine—is	17.25 feet.
The vertical hight that water is lifted is	92.70 feet.
The discharge pipe from engine to reservoir is 4 inches inside diameter, 610 feet long, and has six curves, or bends, and one straightway valve in it. The resistance of this pipe is calculated as 7.91 feet, making the total head against which engine works 100.61 feet = 43.67 pounds per square inch. The indicator diagrams show a pressure of 44 pounds per square inch, when the delivery valves are closing.	100.61 feet.
Water delivered per minute into the reservoir, the average of a number of tests	135 American gallons.
Waste water from the engine per minute, weir measurement	901 8 American gallons.
Total quantity of water used by the engine per minute	1026.8 American gallons.

$$\text{Efficiency of the engine} = \frac{125 \times 100.61}{1026.8 \times 17.25} = \frac{12576.25}{17712.3} = 71 \text{ per cent.}$$

Table II.—Measurements of the Efficiency of the Hydraulic Pumping Engine at St. Mary Cray, Kent.

Head of water, in feet	7.79	7.76	7.810	7 850	7.449
Resistance in the rising main measured by the pressure gauge	79.50	78.40	86.500	68.100	72.400
Quantity of water delivered per minute, in imperial gallons	49.80	52.00	17.600	39.100	28 000
Quantity of flow to tail race per minute, in imperial gallons	725.00	725.00	571.600	611 500	642.000
Total quantity of water used per minute, in imperial gallons	774.80	777.00	589.200	650 600	670.000
Quantity of air compressed, in cubic feet per minute	.....	.....	7.316	5.128	9.126[1]
Efficiency of the engine, per cent	65 80	67.70	75.610	75.480	87.000[1]

[1] Including air used in motor.

It may be mentioned, however, that the engine constructed for the Isabella Furnace was erected for a few weeks for experimental purposes under a fall of only 5

or 6 feet, and with this small head the ante-chamber held sufficient air, when the dipping tube was lowered, to absorb the power of the water column in compressing it. The engine was allowed to run for a considerable time in this way, working solely as an air compressor, and it was found that the quantity of air confined could be regulated with sufficient exactitude to prevent any waste, whether by ex-

THE CHALLENGE UNIVERSAL GRINDING MACHINE.

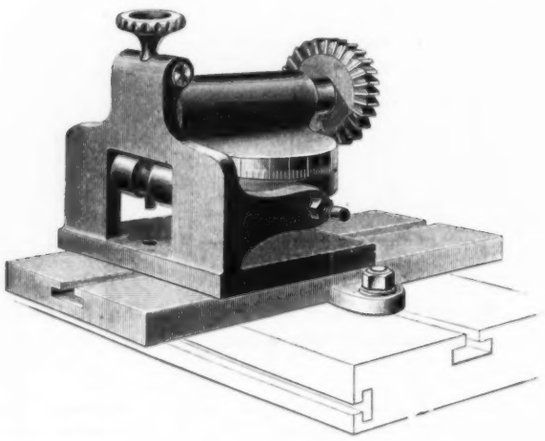
cess or by deficiency, but the circumstances did not admit of the efficiency being measured.

Another result was demonstrated in the engine at St. Mary Cray which there was no opportunity to test at Barneston. The head against which it was pumping was frequently varied by opening or closing a sluice valve in the rising main. No alteration of the speed of the engine or any gearing down or up was necessitated by such a fluctuation of head, the quantity delivered instantly increasing or diminishing accordingly. On one occasion water had to be used which carried in suspension large quantities of earth, gravel, and even stones, besides floating chips, sticks and rubbish of various kinds to such an extent that a steam pump which was in use at the same place could not work at all, and was choked up and stopped many times a day. It did not, however, obstruct the action of the hydraulic engine on any single occasion.

Mexican importers of American agricultural machinery complain because of the failure of the manufacturers to print in Spanish the instructions for putting the machinery together. The purchasers are at a loss to understand the English terms employed; hence prefer to deal with European manufacturers who furnish their customers with Spanish instructions.

The Challenge Universal Grinding Machine.

The Appleton Mfg. Company of Philadelphia have designed a grinding machine to supply a want in their own shops, where great accuracy and convenience in operation were required. It has been improved from time to time, and finally enlarged to meet general requirements. The machine carries 20 inches between centers, and swings 10 inches. The head is operated by a hand wheel, and can be bolted solidly at any point. It turns end for end for internal grinding, having a supplemental head for very small wheels, driven by a pulley in the position of the main wheel at very high speed. The spindle is bored taper for arbors for different size wheels, and is turned taper and well arranged for taking up wear and excluding grit and dust. The boxes are lined with phosphor bronze. The headstock and footstock are fitted to a T-slot in the platen, thereby making the alignment of the centers sure. There is a removable piece in the base of the headstock, to swivel the headstock as desired. The spindle in the headstock is driven by an overhead drum, shown in the engraving, connected to the cone with three steps, thus varying the turn of the work. The automatic feed is also provided with three changes of speed of feed. The platen swivels to taper of 2⅛ inches to the foot and is graduated; it is operated by a screw at one end and bolts securely at the other end. The machine grinds straight or taper, inside or outside and on dead centers or otherwise. The main emery wheel spindle is 1¼ inch in diameter. The tight and loose pulley on the countershaft is 6 x 3 inches face. The driving pulley for the emery wheel is 14 x 3 inches face.



The Challenge Cutter Holder.

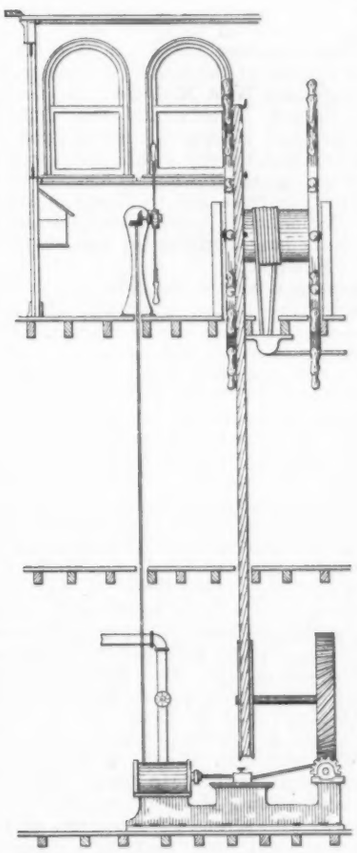
The Challenge Cutter Holder.

This holder is intended for use with the grinding machine just described. With its aid every form of milling cutter can be accurately and quickly ground. The cut represents it bolted to the platen and holding a face mill. The upper part of the scale plate is bored for a mandrel with collar and end nuts front and back and swivels upon the plate supporting it, means being provided for securing it at any degree on the scale, the supporting set screws at the sides allowing upward and downward motion by means of the screw seen at the top and extending through a rock shaft below. These features will be appreciated by all tool-room men. The swiveling of the top graduated plate allows the widest range of angle for bevel cutters, while the upward and downward adjustment for hollow and face mills will be found all that is desired. End and hollow mills are chucked.

Steam Steering Gear.

Upon most all the ocean and sound steamers, and also upon the larger river boats, steam steering gear has been introduced, with the very desirable results of lessening the liability of accidents and curtailing the amount of help required in the pilot house. On the sound it is more readily seen how much is gained by the new over the old method, and a trip round the Battery and through Hell Gate will prove to the observer that quickness of action and much care has to be exercised at all times to prevent the fouling of small craft, which constantly move about in these waters.

Time was—not long ago—when it required the united efforts of four strong men to handle a steamer from the time she left her pier until she had passed through the gate. Now the exertions of a child would handle the largest steamer floating. In the pilot houses of to day are still found the old hand wheels, but they are not used except in case of accident to steam gear. The small wheel that controls the vessel is situated in the front part of the pilot house, and is about 3 feet in diameter. A brass upright forms the bearing, and also contains the bevel



Steam Steering Gear.

gears which connect the hand wheel with the engine shaft. The engines are on the main deck and directly below the pilot house. The slide or port valves are connected to the vertical shaft which runs to the hand wheel in the pilot house.

The engines are horizontal and similar to those used in running the ordinary elevator, and the principle involved in reversing them is the same as that of the link motion on a locomotive. The hand wheel from the pilot house acts as a reversing lever.

The engines are connected with a screw gear, which engages a gear having on same shaft a sprocket wheel. This wheel carries the belt or cable, and again the cable runs over a pocket on old hand wheel in the pilot house, so the power is transmitted to the old hand wheel, and from there to the helm by the regular method of rudder chains. When the old hand wheel was used the pilot was enabled to tell the position of the rudder at any time by the amount of strain on the wheel, and the moment the hand wheel was released, there being no resistance, the rudder at once came to the position parallel or in line with the vessel. With the new methods of gearing this is not the case, as the rudder stays at any angle it may be in, and as there is no strain on the small hand wheel, an indicator has to be used to tell the position, also that the chains may not be parted by running engine too far either way. This is done by having a traveling telltale connected with the chain drum, and the slightest movement of the hand wheel causes the indicator to move, telling at a glance the exact position of the helm. And a phosphorescent coating makes it readily seen at night. On different vessels different apparatus is used, but all have the same principles.

The fact of a large vessel being able to turn almost at right angles to her course in three times her own length is a practical illustration of the advantage gained by the new method. Probably no application of steam power in late days has done so much toward insuring the safety of the public as the one of which we write. Certainly the fact of having no severe physical strain on the man who has the lives of hundreds of human beings in his hand is an advantage over the old system, which was extremely hard on the person having the guidance of the vessel to attend to.

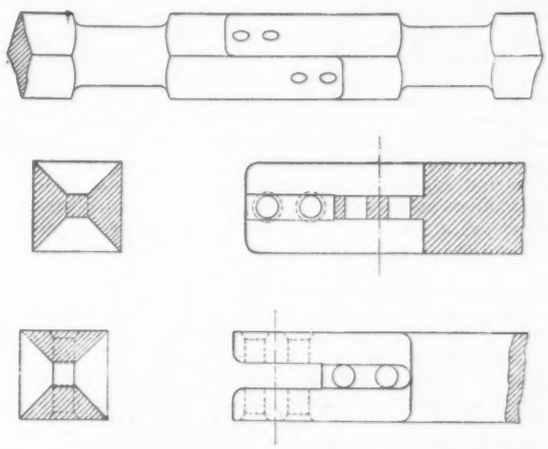
Shaft Coupling.

At a recent meeting of the Engineers' Club of Philadelphia a new form of shaft coupling was described by Wilfred Lewis. This method is the result of several attempts to join the ends of two shafts by a mechanical union no larger in section than the shafts themselves and of maximum strength, stiffness and durability.

In its present form the coupling has passed through an experimental existence in the hands of Wm. Sellers & Co., Incorporated, and is thought to have sufficient merit to be worthy of the patent which was granted for it a few months ago. It is not, therefore, strictly speaking, a brand new thing, but it occurred to me that some account of the failures that led to its invention, together with the tests to which the joint has recently been subjected, might be of interest to the club.

The need of such a coupling came to my attention about six years ago, while working up the design for a traveling crane to be driven by a square shaft with a sliding sleeve. Quite a number of methods of accomplishing the desired result suggested themselves, and of these I may mention the welded joint, the scarfed joint, the double scarfed joint, and a notched joint with a central pin holding the notched ends of two shafts together.

The welded joint, when well made on wrought iron or soft steel shafts, is undoubtedly superior to any other in strength, stiffness and durability, but it is not a convenient joint to put together or take apart in a line of shafting supported on tumbler bearings, often 30 or 40 feet high.



SHAFT COUPLING.

In making such a joint the alignment must be carefully preserved, and the length of the shaft, when finished, must be reasonably accurate on account of spacing the tumbler bearings. Electric welding might be employed to advantage on small shafts, but it does not seem practicable as yet to weld shafts from 2½ to 3½ inches square in place by that method.

One objection to the welded joint may be raised on account of the deterioration suffered in some grades of steel by unequal heating, but the most serious objection to it lies in the difficulties which attend the operation of welding in place. The scarfed joint was considered and rejected on account of its inherent weakness, all the strains passing through it being transmitted by the uniting rivets. The double-scarfed joint had decided advantages over the single scarf in the transmission of torsional strain, and for bending strain the rivets acted in double instead of single shear, but still the rivets were subject to strain in every direction, and were consequently liable to work loose. The double-scarfed joint was, therefore, rejected also as impracticable. To avoid the difficulty of constructing a rigid joint capable of sustaining transverse as well as torsional strain, a loose joint was contrived by simply notching the ends of two shafts, and uniting them by a pin in the axis of the shaft held by cross pins or rivets at the ends.

This joint was theoretically much stronger than the scarfed joints for torsion, and being comparatively flexible, it was expected that the necessity for very accurate alignment would be thereby avoided. But this expectation was not realized, and after a few months in service the wear on the driving surfaces began to be apparent. To reduce this tendency to wear care was taken to perfect the alignment, and in subsequent joints the notches were cut deeper. It was evident, however, that something better was needed, a loose joint

being subject to wear from imperfect alignment, and all rigid joints, hitherto considered, being laterally weak.

The coupling now before you was designed to remedy all the difficulties and defects which I have just pointed out. It may be described as a combination of interlocking grooves and tongues united by rivets. The shaft is grooved on planes passing through its corners, the space between the bottoms of the grooves forming a strong web, which is slotted from the end for half its length. When put together the tongues on one shaft are drawn up by rivets passing through the web on the other shaft. The rivets thus bring the driving surfaces into close contact, and the joint is not liable to rub when out of alignment, on account of its length and lateral stiffness. Furthermore, there can be no strain on the rivets other than the initial strain under which they are set, and they are, therefore, not liable to work loose. To take the joint apart it is simply necessary to chip off the heads of the rivets and drive them out. These couplings are all fitted up to gauges, and the rivet holes are drilled after the shafts are put together. In regard to strength, stiffness and durability, the three requisites for a good coupling, the problem appears to be satisfactorily solved.

To ascertain the torsional and transverse strength of the joint, the samples on exhibition have been tested to destruction, or nearly so, in the following manner: A short piece of coupled shafting, 2½ inches square, was fastened at one end, while the other end was supported so as to be twisted by a weighted lever. A load of 1000 pounds, at 85 inches rad., twisted the joint about 15°, and permanent set began to take place at about half this amount, showing it to be good for a twisting moment of 42,500 inch pounds. To compare the strength of the joint with that of the solid shaft and ascertain accurately the elastic limit of the material, the shaft was turned down to 1¾ inches diameter, 6 inches long and loaded as before by a weighted lever. In this manner the elastic limit of the journal was ascertained to be reached at 33,320 inch pounds. When a permanent set of 20° had taken place the resistance was 57,700 inch pounds, and when twisted 90° it was 66,940 inch pounds.

If this load had been continued the joint would probably have twisted off. To compare the strength of the joint with that of the square shaft, we can say that for like defections a 2½-inch joint carries 85,000 inch pounds, against 57,700 inch pounds for a 1¾-inch journal. From this it appears that a 2½-inch joint is about equal in strength to a 2-inch journal. But a 2-inch journal has only 0.42 of the elastic strength of a 2½-inch square shaft, and, therefore, the joint under consideration may be said to have about seven-sixteenths of the strength of the solid shaft. The most that could be expected of a mechanical union of any kind would be 50 per cent., because half of one shaft must be cut away to make a joint for the other. Allowing 10,000 pounds fiber stress as a safe working limit, it appears from the foregoing that a good rule for the working strength of this coupling would be $BM = 1000\ d^3$, in which BM = twisting moment and d = side of square.

Having tested the joint for twisting, it was desirable that it should also be tested for bending, and a new joint was made for the purpose. This joint was clamped to a planer table, a long extension lever was added, and loads were gradually applied to determine the elastic limit and ultimate strength. No perceptible set took place until a load of 27,000 inch pounds was reached, after which the set gradually increased, until at 108,000 inch pounds it was evident that the ultimate strength would soon be reached. The joint continued to deflect, however, until 144,000 inch pounds was reached, when it broke by shearing the rivets and prying off the upper part. Similarly the solid shaft was testedand found to deflect permanently at 160,000 inch pounds, and the deflection was continued until, under a load of 300,000 inch pounds, it amounted to a bend of about 20°. Under this load the set increased so rapidly that it may be taken as a measure of the ultimate strength.

Here again the transverse strength of the joint appears to be nearly half as great as that of the solid shaft, but the elastic strength is less than one-fifth. This low elastic limit is probably due to the slip which takes place between the fitted surfaces, but even at 27,000 inch pounds the joint is very stiff indeed, and up to all ordinary requirements. The only transverse strain that can come upon it is that due to imperfect alignment, and being placed, as it always is, near a journal, the flexibility of the journal can be made to relieve the joint. For this purpose the journal is made small enough to equal the joint in torsional strength, or 0.8 of the diameter of the square shaft, and it thus becomes flexible enough to relieve the joint without weakening the shaft. As an additional relief the shaft is sometimes turned down on both sides of the joint to the diameter just given. The material used in these experiments was cold-drawn steel of very good quality. The elastic limit for torsion was about 33,000 pounds per square inch, and that for bending about 60,000 pounds per square inch.

In durability the joint promises well, but as it has in no case been in use for more than two years, it may be premature to say that it is quite equal to a weld. Thus far there has been no complaint that I know of against the present form of joint. To insure torsional stiffness and obtain large wearing surfaces it is customary to use large factors of safety, and the reduction of strength at the joints and journals is not often a serious matter, because the shaft would be just as large if welded. It may be said in conclusion that the joint is applicable to round shafts as well as to square. It is not expected, however, that it will supersede any of the common forms of couplings now used for shafting, but in special cases, where the ordinary coupling becomes a serious obstruction, this joint approaches in strength and stiffness all that can be expected of a mechanical union no larger in section than the shafts themselves.

Recent talks with progressive railroad men lead the *Railroad Gazette* to believe that the time is not far distant when a trial will be made to show the utility of steel center sills in freight cars, and there is every indication that the next decided change in car construction will be lowering the car floor and placing the draw bar between the center sills. With this it is expected will come a trial of steel channels for sills. Two roads are already seriously considering this, and have made estimates of the difference in cost. The price at which steel channels for this purpose are offered is but little more than that paid for steel rails, and at such rates the increased cost of a steel center sill is extremely small and all out of proportion to the probable advantage to be obtained.

Oklahoma has started its first installment of the great wheat crop of 1891 from Guthrie. The cars are decorated with bunting. Some of the sentiments are as follows: "25,000 bushels of wheat from Guthrie, and 14,500,000 to follow." "Average of cotton 1½ bales to the acre." "Corn, 50 bushels and wheat 25." "This train is a sample of Oklahoma's mighty crop."

MUSKEGON'S INDUSTRIES

The Progress Made in Eighteen Months.

Our columns have frequently set forth in recent years the wonderful progress made in building up manufacturing towns in different parts of the country. But the whole story of the wonderful achievements of these modern town builders has not yet been told, and it may be doubted whether any publication short of the United States Census ever will be able to cover the entire subject. In the present issue we propose to devote some attention to the remarkable development of manufacturing industries effected by enterprising and public-spirited citizens of Muskegon, Mich. As it is likely that not a few of our readers will have difficulty in locating this city without the aid of a map, we will state that it lies on the east shore of Lake Michigan, almost directly opposite Milwaukee, and, therefore, northeasterly from Chicago. It is 85 miles from the former city and 114 miles from the latter by lake, and enjoys navigation facilities with both cities the year round, as the Muskegon harbor, from natural causes, is very seldon icebound, its entrance having never been known to freeze over. Three railroads connect the city with the railroad system of the country—namely, the Chicago and West Michigan, the Grand Rapids and Indiana and the Toledo, Saginaw and Muskegon. Its population has increased rapidly within the past two decades, having grown from 6002 in 1870 to 11,262 in 1880, and to 22,668 in 1890. The distinction is now claimed for it of being the largest city on the east shore of Lake Michigan.

Muskegon was at one time very prominent in the lumber trade, and still possesses an important lumber interest. The culmination of this trade occurred in 1884, and since then, as a result of the exhaustion of timber lands, there has been a gradual decline in the output of the Muskegon sawmills as well as a reduction in their number. The development of the lumber interests had, however, brought considerable wealth to the community, and the citizens were too enterprising to see their city, with great natural advantages and an excellent business location, fall into a state of decay. They therefore organized early in 1890 a body known as the Muskegon Improvement Company, with the following officers: President, L. G. Mason; vice-president, F. H. Holbrook; executive committee, L. G. Mason, F. H. Holbrook, David D. Erwin, F. A. Nims and Geo. L. Erwin; trustee, Geo. L. Erwin; manager, C. C. Howell. This company acquired title to nearly 1000 acres of land joining the city on the south, covered with second growth trees, affording fine shade and adorning the entire addition. The land is a fine level plateu, elevated some 50 feet above Muskegon harbor or lake, affording a most eligible location for either factories or residences. It was named Muskegon Heights.

After purchasing the property the company decided to reserve 110 acres for factory sites, 10 acres for a park, 110 acres for contingences, and to sell the remainder in building lots, the proceeds of which were to be used, after paying for the property, in improving the streets, in assisting the city street car system to extend its line to the Heights, and in subsidizing factories. The lots were speedily sold, the scheme was successfully launched and up to the present time has not encountered a backset. Every precaution was taken to secure either established works with a good business or new enterprises of an undoubtedly high character. The induce-

ments offered them to locate in Muskegon were undoubtedly strengthened by the fact that they were not asked to remove to a wilderness far from the comforts of life and all the conveniences of civilization, but to go to a city well stocked with good stores, supplied with electric street cars, lit with gas and electricity, supplied with public water works, furnished with good schools and numerous churches, and rejoicing in well paved streets. No less than 21 factories have thus been located and more are under negotiation. These establishments are of a varied character, and most of them are already in operation.

Such rapidity of growth in the development of manufacturing interests is simply unparalleled, and as Muskegon is well situated for the distribution of goods over a thickly settled section, the city's future seems to be established on a very substantial basis. The list of new works in which our readers will be most interested is as follows: The Muskegon Iron and Steel Company, manufacturing bar iron and steel; the Temple Mfg. Company, manufacturing the Hartshorn shade roller; the Muskegon Machine and Foundry Company, manufacturing sewing machines and specialties; the Muskegon Malleable Iron Company, manufacturing malleable and gray iron castings; the Morton Mfg. Company, manufacturing key-seating machines, portable iron planers, &c.; the Shaw Electric Crane Company, manufacturing traveling cranes; the Alaska Refrigerating Company, the Electric Alarm Company, and the Muskegon Washing Machine Company. Other new enterprises are piano factories, roller chair makers, manufacturers of inside wood furnishings, cracker bakers, furniture manfacturers, flour mills, &c. Among manufacturing establishments previously located in the city are the Rodgers Iron Mfg. Company, making steam pumps, saw mill machinery and general castings, the Muskegon Car Works, now being reorganized, chemical fire engine works, carriage works, furniture factories, planing mills, boiler shops, &c. Details will be given below of some of the most important of these works.

The Muskegon Iron and Steel Co.

The rolling mill of this company has now been running about nine months, but in that short time it has established a good reputation for the character of the product turned out. The plant at present comprises an 18-inch muck and billet train, also used for rolling large bars, and a 9-inch train, served by two scrap furnaces, each 7 x 14 feet. A 12-inch roughing train is now on the ground and will shortly be in position to be used in connection with the 9-inch train, increasing its output. The 18-inch train will also be lengthened to enable it to do more work. The engines operating these trains are located in the center of the building, with the rolls in wings to the right and left. The trains are built after special designs by S. T. Williams. They are three high. The top roll is stationary, the middle roll is on the line of the mill, and the bottom roll moves up and down. Varying thicknesses of bars can be rolled by an easy adjustment requiring but a few minutes and without changing rolls. A saw back of the 18-inch rolls is admirably arranged. It is a swing saw, balanced below the level of the floor, so that it is not in the way when not in use. When needed it is instantly brought into position by pulling a lever. Scrap iron and purchased steel billets are the raw materials of this mill. Open-hearth steel works are now being erected, however, and will shortly be in operation. One 15-ton Smythe & Laughlin furnace is about completed, and is only awaiting the erection of an iron building over it, for which most of the frame work is now on the ground. Gas for it will be made in Wellman producers.

The Morgan Engineering Company furnish the hydraulic crane, which is located so as to serve two steel furnaces, as a second will be built as soon as the first is in successful operation. Three gas producers are now in place for the steel works, and two more are to be added for the full plant. The ingots are to be cast 8 inches square and will be bloomed on the 18-inch train, afterward rolled into bars and special shapes for agricultural works. Two other Wellman gas producers are now in use for running the scrap furnaces and are found to furnish ample heat for the purpose. Indiana block coal is used in raising steam under two Heine boilers, but Hocking Valley coal is used for gas purposes. The capacity of the rolling mill at present is from 40 to 60 tons per day, according to the character of the work being done. The plant is so arranged that the Adams direct process may be used. It will be put in as soon as the company are thoroughly satisfied of its success at Latrobe, where it is now being practically tested. Muskegon is but a night's run from Escanaba and enjoys great advantage in its proximity to that great ore-shipping port, which will be more highly appreciated if it is found that the ore can be cheaply run into steel by this process. The officers of the company are as follows: S. T. Williams, president and general manager; W. H. Thompson, superintendent; W. F. Ayers, secretary and treasurer.

The Rodgers Iron Mfg. Company.

The works of this company were established at Muskegon in 1856, growing from small proportions to an enterprise of more than local fame, and are now expanding rapidly with the demands made upon them for machinery and equipment by the new comers. The plant comprises a foundry and a machine shop. The foundry is now too small for the work pressing upon its capacity and will be greatly enlarged very shortly, the plans for the improvement having been drawn. The company have been known in the past as manufacturers of all kinds of saw mill machinery and as sole makers of Wolverine steam pumps, but they are now entering other lines. They have recently cast housings and rolls for the Muskegon Iron and Steel Company and are now engaged on other mill work, among which is a Corliss engine, 20 x 48 inches, for the Muskegon Milling Company. Among the completed work on the floor is a horizontal steam pump of 3,000,000 gallons capacity, intended for public water works. The machine shop of this company is large and well lighted, and has but recently been equipped with the most improved metal working machinery. A smith shop is attached, which contains a steam hammer for heavy forging.

The Morton Mfg. Company.

The plant of this company was removed to Muskegon from Romeo, Mich., and started up in its new location on the 7th ult. The building occupied is a very substantial two-story brick, in the shape of the letter U. The office is in the center of the front; one wing is devoted to wood working and the other wing is used for iron working. The building is 135 feet front and each wing is 50 x 200 feet. A railroad track extends between the wings, giving excellent receiving and shipping facilities to both departments of the works. The company manufacture a line of key-seating machines, portable metal-planing machines, corn husking machines and horse-power machines, all of their own design. The Morton key seat machine is used in the leading machine shops of the country, and is making its way in foreign countries. It not only cuts a key seat but also cuts the key for it. The keys thus made are of perfect fit, so that no filing is afterward necessary. They have just shipped a machine to the Walker Mfg. Company of Cleveland, which is claimed to be the largest key-seating machine ever made. It cuts a key 6 feet long and 6 inches wide. The speed with which these machines operate is a remarkable achievement in metal working.

The portable planing machines made by the company are of a new pattern, and are intended for planing heavy pieces which cannot well be handled by an ordinary fixed planer. They have already found their way into a number of prominent machine shops. The horse-powers made here are very different from the usual treadmills. They can be tipped at either end and will work either way, never requiring to be turned. They are furnished with a governor, which acts like the governor on a steam engine, so that the machines cannot run away when suddenly relieved of a load. The rollers are "full ball bearing," causing a minimum of friction, and the oil receptacle on each traverse wheel is corked, so that the oil cannot run out when the wheels are traveling on the under track. The corn-husking machine is a very ingenious piece of mechanism. It takes the corn stalk as it is cut in the field, husks the ears and drops them under the machine, while the stalk is cut into fodder and taken by a carrier in another direction. The factory of this company is much larger than the one occupied at Romeo. Room to grow has been provided, but indications now point to the early use of the whole building. They manufacture every part of their machines but the castings, which are purchased from outside foundries.

The Michigan Washing Machine Co.

This company removed from Grand Rapids, Mich., bringing with them a large plant and a well established trade. Their new factory was put in operation in January last. It is a two-story brick building, 60 x 200 feet, giving the company considerably more room than they had at Grand Rapids. They are now turning out from 800 to 1000 machines monthly, ship them all over the country and have done some export trade. One style in one size only is made, but arrangements are being perfected to add the manufacture of cedar tubs. Special machines are employed in this factory, introducing numerous labor-saving devices.

The Alaska Refrigerator Company.

This will be one of the largest manufacturing enterprises in Muskegon. It will be put in operation about October 1 and will employ some 500 men. The company's works have hitherto been located at Michigan City, Ind., but the machinery is now in process of removal to Muskegon, where they will enjoy far greater facilities. Fine brick buildings of the most substantial character have been erected for them. The manufacturing building is 60 x 340 feet, three stories high. Adjoining it is an engine and boiler house, 50 x 60 feet, and dry kilns, 37 x 177 feet. The warehouse is 60 x 400 feet, two stories high. The motive power is supplied by a 250 horse power Reynolds Corliss engine. Three boilers, built by the Muskegon Boiler Works, furnish steam. Three other engines will be used, two for the Sturtevant heating system and one for electric lighting. A 400-light plant is being installed. From 4,000,000 to 5,000,000 feet of lumber are now being stored on the company's grounds to be worked up the coming season. It is estimated that the new plant will be treble the capacity of the old works at Michigan City. The company expect to add car refrigeration and the manufacture of large refrigerators for hotels and public institutions to their regular line.

The Shaw Electric Crane Mfg. Co.

The buildings of this company are being hastened to completion so that manufacturing operations can begin by October 1. The main building is 100 x 200 feet, brick, partly one and partly two stories high. Other buildings comprise a smith shop, 36 x 72 feet, and a girder shop, 60 x 85 feet. These buildings have an unusual number of windows and will therefore be well lighted. The equipment is being completed at a number of different works, to be in readiness as soon as the buildings are finished. The company are anxious to get installed in their new quarters as quickly as possible, having a great deal of work under contract.

The Electric Alarm Company.

A fine brick two-story building, 40 x 110 feet, is devoted to the manufacture of specialties by this company. Their chief business will be the construction of electric fire alarms. They take contracts to fit up buildings with thermostats connected with the fire stations of a city, which will show in what building a fire has broken out. This apparatus works with a closed circuit and a current in continuous operation. The breaking of a thermostat causes the alarm. A defective wire will give an alarm, thus keeping the system always under test and overcoming objections to the open circuit system. The batteries are always placed in the fire station. The thermostat has a very small link of composition metal consisting of lead, tin, bismuth and cadminun, which will melt at any temperature from 140° up, and is, therefore, very sensitive. The company also make an open circuit alarm, for use with telephone companies, which possesses valuable features, besides other devices of a varied character for fire alarm purposes.

The Muskegon Machine and Foundry Company.

The company operating under this name have several buildings fitted up with machinery and auxiliary appliances. They propose to manufacture malleable castings, carpet sweepers, sewing machines and other specialties. The plant erected for the Muskegon Malleable Iron Company will be operated under the same control. The main building is a three-story brick, 45 x 150 feet. The first floor is used for heavy machines, pattern room, offices, &c. The second floor will be occupied by light iron-working machinery, such as milling machines, screw cutters, drills, &c. The third floor will be used for finishing. The power house is 44 x 110 feet, two stories high, also built of brick. The engine and boilers and smith shop occupy the lower floor, while the upper story will be fitted up with ovens and other apparatus for japanning, nickel plating and polishing. An engine of 125 horse-power, built by C. & G. Cooper & Co. of Mount Vernon, Ohio, supplies the motive power. Steam is raised in three Cooper boilers, each 5 x 16 feet. The power house will also contain two 500,000-gallon steam pumps, to furnish water to the residents of the Heights district.

The foundry building is a neat brick structure, 90 x 220 feet, divided into several compartments, of which the main room is the molding shop and the others are a core room, a brass foundry, a tumbling or cleaning room, an annealing room and a shipping room. The foundry is equipped with a double-air furnace for melting iron. The company expect to melt iron with gas. They have put up two producers for manufacturing gas from crude oil by the the Turner system, which is in very successful operation in the Hayden Iron Works at Columbus, Ohio. The gas thus made will also be used for raising steam, operating the annealing furnaces, core ovens, &c.

The Hearings of the General Appraisers.

Henderson M. Somerville and J. B. Wilkinson, Jr., chairmen of the two Boards of General Appraisers, have issued the following circular:

All protests pending before the Board of General Appraisers, and received at this office on or before July 22, 1891, have been set for hearing before the two boards, now on duty at the port of New York, at 11 o'clock a.m. of the days respectively attached to the following list of subjects. The call of the docket will commence on Monday, September 14, and conclude on December 9, or as soon thereafter as practicable.

The cases set for each particular day designated have been grouped according to the similarity of the subject matter involved, so that the same hearing may embrace analogous questions of law and fact, and all like cases be thus disposed of by one decision. Every person having a case will thus be enabled to have his day in court.

All persons concerned as parties or interested in the questions under consideration are invited to be present at these hearings or to file briefs or arguments before the particular board holding the hearing. The two boards of three General Appraisers are designated for convenience respectively as Boards No. 1 and No. 2, and the docket names the board by number before which each class of cases will be heard. Litigants desiring witnesses to be summoned will furnish to the clerk of the board a list of names of such witnesses with their residences in due time, describing the case and naming the day set for the hearing.

The list of cases will be found to embrace many subjects which have heretofore been ruled on by one or both of the boards, as well as some now pending in the courts for decision. The boards will use their discretion in continuing or suspending the consideration of these cases unless the parties interested, including the Government and the importer, express dissent from such disposition. All applications to suspend particular cases, or to continue the hearing to a future day, will be respectfully considered at any time, and may be made orally or in writing. Protests received too late to be included in this list may, on seasonable application, be embraced in the hearings involving analogous questions of law and fact. Litigants at a distance may submit evidence by affidavits as to questions of fact involved in the contention raised by their protests.

Attention is invited to the following rule of court recently adopted by Judges Lacombe and Wallace of the United States Circuit Court in New York. Under its application vital rights of importers may be forfeited by neglecting to attend to their cases fixed for hearing before the board:

RULE II.

No order for an additional or further return will be made where it is made to appear that the protestant had reasonable notice to appear before said Board of General Appraisers and show cause why the decision of the Collector should not be affirmed, and after such notice, without proper excuse, he failed to appear in person or by attorney, and he offered no evidence in support of his contentions as presented in his protest, and no such evidence is found in the record and papers in the case, and none was taken by the board.

The subject of Additional Duty will be heard before Board No. 2 November 23; Bicycles and Parts Thereof, September 21; Clocks, September 21; Fire Arms and Parts Thereof, October 16; Metal, Manufactures of, September 25. Before Board No. 1 will be heard Administration; Questions of Weight, Measurement, Coin Values, &c., September 24; American Merchandise Returned, September 22; Charges and Commission, September 24; Not Entertained (Protests), November 3.

NEW PUBLICATIONS.

POOR'S MANUAL OF RAILROADS. Published by H. V. & H. W. Poor, New York.

The current number is the twenty-fourth annual issue of "Poor's Manual of Railroads." The new manual is considerably larger than the previous number and more than 200 pages larger than the edition for 1889. Of this increased size over 50 pages are taken up by specially engraved maps of the leading railway systems of the country. The new maps now introduced in the manual concentrate the eye at once upon the whole system, show all the chief cities and towns, its connections with other systems and its relative geographical importance. The introduction to the manual presents this year the features of an unusually elaborate summary of the financial condition and operations of the railroads of the country in 1890, and during the decennial period just closed with the census year of 1890.

The publishers of the manual now issue two supplementary volumes—one entitled "Poor's Directory of Railway Officials," the other, "Poor's Hand Book of Investment Securities." In the first is given, in addition to a full list of the railroad companies of the United States, and of the contiguous countries of Canada and Mexico, and of the important officers connected therewith, detailed statements of the railroads of other American States, of private tramways, and of the street railways of the United States and Canada. "Poor's Hand Book of Investment Securities" covers the entire field of investment in the United States, the financial condition, indebtedness, sources of income, assets and population of every State, county, city and town issuing its obligations for any purpose. It also contains full statements of the industrial enterprises in which the public, by virtue of holding evidences of debt issued by them, secure an interest. Such enterprises have in recent years become very numerous and important, the tendency in every department of production and distribution being toward consolidation of smaller into greater interests.

Improved Sugar Machinery.

The New Orleans *Times-Democrat* speaks of the effect of the new sugar bounties in concentrating the sugar industry in Louisiana in a comparatively few establishments and introducing improved machinery.

There has been a steady improvement in the machinery used for some time, and an immense amount of money has been expended for it in the way of triple rollers, centrifugals, diffusion batteries, &c. A natural consequence of this system, and the great expense thus forced on the planters has been to require a very large capital to carry on the business, so that the plantations are growing larger in extent and smaller in number. There were 1500 in *ante bellum* days, 746 last year, while only 704 will manufacture this year—that is, have applied for the bounty.

Of the sugar houses in operation last year 156 had vacuum pans, using only the most improved methods; 143 had open pans and 447 open kettles. The latter, however, were mostly small concerns and manufactured only a small percentage of the sugar production of the State. They are rapidly going out of favor, and it is a question of only a few years when they will be completely abandoned. There is a tendency at the same time that the large plantations are growing larger by absorb-

ing neighboring ones for the small planters to abandon the manufacture of sugar altogether and sell their cane to the refineries or central factories.

The effect of the new movement in the sugar industry is seen in the greatly increased demand for improved machinery, giving a stimulus to the foundries here, which, with few exceptions, report their business, particularly in the manufacture of sugar machinery, to be many times greater than ever before. Nor are the orders for machinery confined to New Orleans alone, but many of them have been placed in Philadelphia, Cincinnati and Louisville and a considerable quantity imported from Europe, more than ever before.

The Woodruff System of Keying.

The Woodruff Mfg. Company of Hartford, Conn., have brought out a novel system of keying which is the outgrowth of many years' practical experience of the difficulty of making a neat and inexpensive job by the methods of keying now in general use. Under this system the key seat is cut longitudinally in the shaft, as shown in Figs. 1 and 3, by means of a milling cutter, Fig. 4. This cutter corresponds in thickness to the key to be inserted and is of a diameter corresponding to the length of the key. The key being a semicircle the cutter, Fig 4, is sunk into the shaft as far as will allow sufficient projection of the key above its surface to engage the keyway in the hub it is designed to hold in position. The operation of cutting the key seat is simple and does not require skilled labor.

There are 25 different sizes of keys used in the system, the standard scale of sizes being such as to meet the requirements of a large majority of the machines now made. With the system is employed a chart that shows at a glance the proper size of key and cutter to be used in keying shafts and spindles of various diameters.

Where a long key or feather is required, two or more keys are inserted in the manner shown in Fig. 1. Owing to its peculiar shape the key may be slightly inclined so that it will serve to support the pulley on a vertical shaft, provided the key seat in the hub of the pulley is made tapering and of the proper depth. The advantages claimed for the system are thus presented by the manufacturers: But one operation is required in cutting the key seat, it not being necessary to drill a hole for the clearance of the splining tool. No filing is required to fit the keys, as both keys and cutters are accurately made to standard sizes. Where it is necessary or desirable to put a nut on the end of a shaft or spindle it dispenses with the operation of reducing the diameter by the depth of the key seat, in order to avoid cutting into the thread. The thread may be cut full size. It not only reduces the cost but also increases the strength of the union. The key reaching deeper into the shaft than the key of ordinary construction, is more firmly imbedded and hence capable of standing a much greater strain.

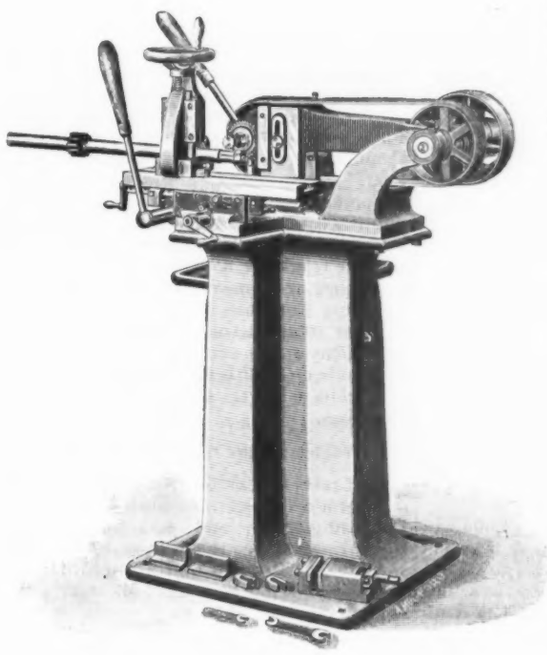


Fig. 5.—Key Seat Milling Machine.

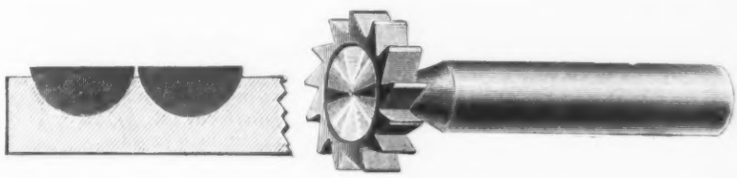


Fig. 1.—Two Keys in Position.

Fig. 4.—Milling Cutter.

Fig. 2.—Different Sizes of Keys.

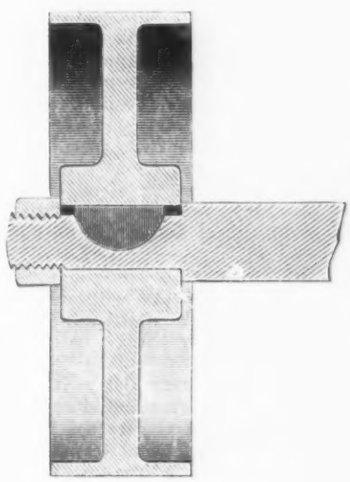


Fig. 3.—Section Showing Key in Position.

THE WOODRUFF SYSTEM OF KEYING.

Key Seat Milling Machine.

This machine, shown in Fig. 5, is specially adapted for use in connection with this system of keying, and is also applicable to the usual system of splining. With the convenient upright vise in the cut it is practically, with the exception of spiral milling, a universal milling machine Being designed for use with both lever and screw feed, the change from one to the other can be readily made without adding or taking from any part. The movement of the slide by the rack is 3½ inches, by the screw 12 inches, cross movement of slide by screw is 4 inches and vertical movement of spindle is 3½ inches. Spindle pulley 7 inches diameter, 2 inches face. Grade of cone 5, 6½ and 8 inches, 1¾ inches face. Spindle counter balanced for sensitive cutting. Greatest distance of spindle from top of slide 5 inches, from top of vise 3½ inches. The spindle is made of hard steel and has antifriction bearings. Weight with vise and countershaft, 658 pounds. When desired the horizontal vise shown at the base of the machine is furnished.

WORLD'S FAIR NOTES.

Financial Matters.

Money has been rolling into the treasury during the last week at the rate of hundreds of thousands daily. Monday Treasurer Seeberger took in $195,000 and Tuesday $205,000. The record approximating these amounts has been kept up several days. Great gratification is expressed by the World's Fair officials at the promptness with which subscribers are paying up their assessments.

On Tuesday the question was sprung as to the necessity of asking Congress to loan the World's Fair $5,000,000, to be secured by the net receipts of the exposition. Members of the local directory and and the National Commissioners who were in the city nearly all approved the idea. It was found that to build the fair on the proportions outlined would cost about $18,000,000. The subscriptions to the capital stock and the $5,000,000 granted by the City Council of Chicago, it was believed, would reach $12,000,000. This would make it necessary to ask Congress to loan approximately the difference between the money to be paid in and that to be expended before the opening of the gates.

A Gigantic Microscope.

A magnificent microscope has just been completed by the Munich Poeller Physical and Optical Institute for the Exposition, at a cost of $8750. It possesses a magnifying power of 11,000 diameters. As might be expected, electricity plays an important part in the working of this gigantic instrument, which, after inspection by American citizens, is expected to give an impetus to the Munich mart for scientific

apparatus. The electricity furnishes and regulates the source of light, which placed in the focus of a parabolic aluminum reflector reaches an intensity of 11,000 candle power. The electricity also provides the means of an ingenious automatic mechanism for the centering of the quadruple condensers illuminating the lenses. There is an arrangement for the exact control of the distance of the carbon point. The most important novel feature is the cooling machine, which is indespensable on account of the extreme heat, 1-43 calories per second, generated by the intense illuminating arrangement. A machine regulated by a Helmholtz electric centrifugal regulator provides the several microscopic and polariscopic systems of the apparatus with a fine spray of fluid carbonic acid, which immediately after its release from the copper vessel, in which it is held under a pressure of 23 atmospheres, becomes converted into gaseous matter, so intensely cold that only 0.00007 gram of carbonic acid per second is required to give the result. The magnifying power of the apparatus with ordinary objectives, as has been stated, is about 11,000 diameters, but with the oil immersion it can be increased to 16,000.

Building Progress.

The detailed or building plans for the Fine Arts Palace to be erected in the improved portion of Jackson Park will be perfected in two or three days, and ground will be broken for the erection of the edifice within a fortnight.

Owing to the modifications in the construction material necessary for the Government Building supplementary bids have been called for to keep the cost of its construction within the limit of the Government appropriation. Government Architect Bell says that these modifications have been worked out entirely within the class and character of material used, and that they will not in any way alter the architectural design of the building created by Treasury Architect Edbrooke. Mr. Bell says he fully expects that the contracts as revised will be let by the 15th inst., and that immediately after that date the work of practical construction will be commenced.

The temporary delay in commencing work on the great building for Manufactures and Liberal Arts has been ended by the completion of all details of agreement between the Construction Department and the contractors, Frank Agnew & Co.

The Chief of the Machinery Department.

L. W. Robinson of Philadelphia, a chief engineer in the navy, has been appointed chief of the department of machinery and confirmed by the Board of Directors. Mr. Robinson is a native of Philadelphia and served with distinction in the war. His chief recommendation for the position he is to assume is his management of the great machinery exhibit at the Centennial Exhibition in 1876. Mr. Robinson was a prominent candidate for chief engineer of the Water Department of Philadelphia when Colonel Ludlow was elected, and was considered last March as a candidate for Director of Public Water under Mayor Stuart. He has been at work during the last three years aiding in the construction of the new cruisers, being detailed for duty at Cramp's and Roach's shipyards. At present he is engaged in conducting an examination of candidates for promotion in the naval service. When this is finished, which will be in a few days, he will seek leave of absence from the Navy Department to consult with the managers of the World's Fair.

The Tower Project.

The World's Fair authorities believe that Chicago will yet have a grand tower as a feature of the exposition. They are strongly inclined to favor a proposition laid before them the past week by William E. Hale and George A. Fuller. The design is the work of George S. Morrison of Chicago. In hight the tower is 1150 feet from the bottom of the foundations to the top of the flagstaff, 1120 feet from the ground to the top of the staff, and 1070 feet from the ground to the focal plane of the light house on top of the tower. The area at the bottom is 440 feet square. The first landing is a circular platform, 250 feet in diameter. The second landing is 150 feet in diameter, and the top landing, or lantern, is 60 feet in diameter.

At the first landing is a colonnade around the outside, 15 feet wide and 738 feet in circumference. It is within the probabilities that between the first and second platforms there will be room for four restaurants, each 45 x 90 feet and 8 to 12 stories in hight, with elevators stopping at each story, and each restaurant having a seating capacity of about 1000. These restaurants can be made of appropriate styles of architecture, French, German, Spanish and Italian. There will also be room for booths, where curios can be sold. The second landing can be used as a picnic quarters in the day and a dancing platform at night. This landing will hold 5000 people.

The grand lookout on top will be three stories high, and will accommodate 1500 people. Above this will be four offices, which can be used for signal service. Above the offices will be an electric railway carrying lights at night and signals by day. On top is the lighthouse, carrying the most powerful revolving light made. From the flagstaff the Stars and Stripes will wave 100 feet higher than ever flag fluttered on an artificial elevation. There will be eight elevators, each carrying 50 people. Two will run to the top without stopping, two to the second landing, and four to the first. They will have a carrying capacity of 7500 per hour.

A fee of 50 cents will be charged to the first landing, 75 cents to the second, and $1.50 to the top. The estimated daily revenue from the elevator service of the tower is $50,000. One hundred and fifty pleasant days would yield $7,500,000 revenue. One half of this as a conservative estimate is $3,750,000. The sale of privileges would pay all expenses and leave $250,000. The estimated net revenue of the tower is $4,000,000. The cost of the tower, ready for steam connections to the pumps, is $1,900,000. A corporation will be formed with a capitol stock of $2,000,000, and the stock will be sold at par.

Cost of Some Buildings.

Following is a showing of the cost of the principal buildings now being constructed. The totals given are for contracts already let, but these sums must be increased by extras in every case. For instance, contracts for roofs are let separately. For two of the finest buildings—machinery hall and fine arts building—contracts have yet to be let. Also a large number of smaller buildings are being built by the directors and others will follow, and some may be very expensive. Following are the figures as explained:

Woman's building	$113,397.60
Fisheries building	157,822.40
Transportation building	210,171.60
Horticultural building	226,887.00
Mines and mining building	245,407.00
Electricity	295,081.00
Administration	300,627.00
Agricultural building	440,209.00
Manufactures and liberal arts building	1,100,000.00
Total	$3,089,592.60

Not Dabbling in Politics.

The National Commission at its meeting on the 4th inst. disavowed the idea of politics in any action it might have taken during its session. Republicans and Democrats alike disclaimed any intention of passing upon the merits of the McKinley bill

The discussion arose over the presentation by Commissioner Towsley of Minnesota of a resolution asking that the action of the commission in voting that a committee of six to be appointed to visit Washington and see if the tariff laws might not be amended so as to make them less onerous for intending foreign exhibitors be expunged from the records of the commission. Mr. Towsley said that in the first instance there was no necessity for such a committee, since everything it might be able to suggest had already been incorporated in the rules of the Treasury Department regarding foreign exhibitors at the World's Fair.

Commissioner Harris, the original mover for the appointment of the committee, said it referred merely to the tariff regulations of the United States. All intending foreign exhibitors, he said, had complained of tariff duties, and he thought that the special committee might secure from Congress some modification of the customs regulations in favor of exhibitors. He wound up by asking that the whole matter be referred to the Committee on Federal Relations.

Dr. Cochran of Texas said that owing to the misconstruction placed upon this action he wished to have the whole matter of the committee wiped out. He didn't want it understood that as a World's Fair Commissioner he was dabbling with politics.

Commissioner Waller said of the story published that it was a foolish mistake to lend any such significance to the vote. It was the result of a parliamentary discussion, and to connect McKinley with it was pure nonsense.

After some further discussion the appointment of the committee and all matters connected with it was by a vote of 32 to 23 referred to the Committee on Federal Relations.

Freight Rates for Fair Exhibits.

Half rates on exhibits for the Exposition still form a subject of considerable anxiety at headquarters, and a favorable turn toward securing them was taken last week. The Pacific Coast Steamship Company sent a letter to Traffic Manager Jaycox announcing that they would make a rate of one half their regular tariff rates on all goods destined for exhibition, both going and coming. The Pacific Coast Steamship Company have boats running from Alaska on the north to Mexico on the south, including Washington, Oregon, British Columbia and California.

The same day this information was received the Southern Pacific Railroad Company announced their willingness to make a half rate each way on perishable exhibits. The Southern Pacific have a monopoly on a large Pacific Coast territory. They have also a line from Los Angeles to New Orleans and many lines in Texas. The vast bulk of exhibits coming from this line will be transferred from the Southern Pacific to the Union Pacific at Ogden, from which road they will be retransferred to some other of the Missouri River lines. Owing to these facts it is believed the action of the Southern Pacific will lead to like action by all the other Western roads. If so, Eastern lines will be asked to be equally liberal with the World's Fair.

G. Wessels & Co. of New York, who operate a line of steamers between New York, Jamaica and Central America, have made concessions in the interest of the Latin American Department of the World's Fair. They will carry all the commissioners and freight of the Latin American Department free of cost, and articles sent by private exhibitors to the Exposition at one-half rates.

To Work Night and Day.

Work on the Exposition buildings will shortly be carried on night and day. At present there are 1000 men employed on the various buildings which have begun towering skyward. The engines and boilers for an electric light plant have arrived and will speedily be installed, so that there need be no cessation of labor during the 24 hours of each day. In order to comply with the agreements entered into between the local directory and the various labor unions of Chicago three shifts of men at eight hours each will be regularly employed.

Miscellaneous.

Prof. John P. Barrett, Chief of the Department of Electricity, returned from his Eastern trip and brought flattering promises of what big electric firms will do at the Exposition. He said they were willing to enter into arrangements for renting electric machinery at a rental which would effect a saving of 50 per cent. of what it would cost to purchase the plants.

On Monday the Committee on Grounds and Buildings formally agreed to all the proposed changes in the Manufactures Building and the contractor for the building was ordered to proceed with preparations for roofing over the great courts.

The Grounds and Buildings Committee have awarded the contract for the iron work on the Fisheries Building to the Keystone Iron Bridge Company for $20,210.

On Wednesday Chief Ives of the Department of Fine Arts, who is now in Europe, wrote Director General Davis from Paris that he had no doubts of the success of the fine arts section of the French nation, and it was safe to say a grand exhibit was assured.

THE WEEK.

The Census Bureau puts the total wealth of the United States at $62,610,000,000, which means considerable money.

The migration from Canada shows that the people there are settling the annexation question in their own way.

Minnesota expects to harvest 70,000,000 bushels of wheat this year and get $60,000,000 for the crop. She will gather in the corn later. Grain this year is all golden

The size of the wheat crop in the United States is not easily comprehended when expressed simply in numerals. The Cleveland *Ledger* tries to enlighten its readers with a few apt comparisons. The wheat harvested in the United States this year could not be grown on a plain equal in area to Scotland and Ireland unless every acre yieled more than 25 bushels. Our great crop weighs 16,500,000 tons in round figures, or twice as much as a big year's output of the Lake Superior iron region. It would load 1,000,000 average sized freight cars, and make a solid train of loaded cars about 6700 miles long. That is to say, there has been enough wheat grown in the United States this year to load two unbroken lines of freight cars stretching from New York to San Francisco, and then leave enough to fill a great many side tracks. We can give Europe 1,000,000 bushels every working day in the year and still have enough for ourselves. Can the "general reader" form some idea now of the marvelous wheat crop for 1891?

The steamer Empress of Japan made the passage from Yokohama to Vancouver in 10 days and 15 hours, breaking the record by eight hours. A special train on the Canadian Pacific carried a carload of mail from Vancouver to Morristown, N. Y., a distance of 2859 miles, in 3 days and 10 hours, the regular time being 5 days and 18 hours. A "special" on the New York Central made the distance from Morristown to this city, 353 miles, in 6 hours and 58 minutes, an average of over 50 miles an hour. A part of the distance was made in less than a mile a minute. The mail arrived at 4.43 a.m., and was quickly transferred to the City of New York, the time consumed in making the transfer being only 27 minutes. The time, 21 days, from Yokohama to Liverpool, will beat all previous records. The distance from Yokohama to Liverpool is between 11,000 and 12,000 miles, or nearly half way round the earth. It is thus shown that the globe could be encircled in 50 days.

The disaster in Park place, it now seems to have been proven, was caused by the floors being overweighted. Architect J. H. Van Norden of the firm who drew the plans and superintended the erection of the Park place building in 1872, told the coroner's jury that the floors of the building were originally intended to carry a safe load of 200 pounds, dead weight, to the square foot. From reading the testimony of Mr. Liebler, he computed that there was 113 tons, dead weight, of presses, lithographic stones and paper on the fifth floor.

Montreal has a population of nearly 250,000, a gain in ten years of 45 per cent. Ten years ago Toronto had a population of 96,196, while it is now 181,220, showing a growth of 85,024.

The giving up of the big ranches in Montana will create a larger demand for farm implements and machinery. It is said that the manufacturers of agricultural implements are preparing for a large output next year, and that orders for iron have just been placed in liberal quantities.

A new submarine cable line, establishing direct communication between the United States and Brazil, was opened for business last week.

The commerce of Italy for the seven months ending July 31 shows a marked falling off as compared with the same period of last year. The imports decreased $20,800,000 in value and the exports $4,000,000. During the same period the revenue from customs fell off $4,300,000.

James W. Porch, ex-Consul General to Mexico, who has just returned to this country, speaks strongly in vindication of the administration of President Diaz, and refers to the improving opportunities for trade with that country. He says: "Since my first acquaintance with Mexico, six years ago, the strides of progress there have been wonderful—far beyond the comprehension of these who have not kept themselves posted on Mexican affairs. We evidently have been too busy at home in the past to cultivate a foreign trade, and have allowed it largely to take care of itself. Other nationalities have been looking carefully after the commercial interests of Mexico, much to our loss, as time will prove."

The commerce of Boston during the last six months shows an excess over that for the corresponding months last year, both as to the number of vessels employed and the value of merchandise. The imports have been $39,247,327, as against $34,099,314 for the same period last year, and the exports $39,854,894.

It is a discouraging feature in local steamship enterprise that the line from New York to Brazil for some time past has been unprofitable. From the beginning, tramp steamers have frequently offered extremely low freight rates, sometimes taking away merchandise on the dock in course of shipment by the regular line. With the new vessels, which run with more economy, and with tramp steamers better employed in taking grain to Europe, the American company regard prospects more encouraging.

The census of the State of Indiana shows that the population of the State has increased 224,101, or 10.82 per cent., during the decade. In 1880 the population of the State was 1,978,301; as returned in 1890 it was 2,192,404.

The population of the New England States in 1890 was 4,700,745, lacking only about 100,000 to equal that of the entire Dominion.

Notwithstanding the Bardsley defalcation in Philadelphia of about $1,000,000, the increased revenues this year make up the deficit and the tax rate will remain nearly as before.

Several foundrymen of Philadelphia and vicinity have organized a protective association to look after their interests and regulate the prices of trade.

The German embargo on American pork has at last been removed. The agreement not only provides for the admittance of our pork into Germany, but also affords to the United States the same schedule with reference to our farm products as that enjoyed by Russia. Secretary Rusk is confident that he will soon be able to extend our market for corn by introducing it into Germany for use as an article of food. The *Freisinnige Zeitung* adds that while the prohibition is removed, the duties are retained.

The number of spindles in Southern cotton mills was 2,130,823 in 1891, against 667,854 in 1880.

Steamers leaving this port for Cuba under the new reciprocity treaty with Spain are going out loaded to their full capacity with corn, petroleum and provisions, which are now admitted free of duty.

The failure of the manufacturers and window-glass workers in Pittsburgh to agree results in a strike, and 10,000 men will probably remain idle several weeks.

The mills in Pittsburgh are making cotton ties in larger quantities than ever before.

The Cuban sugar crop promises 800,000 tons, the largest ever grown and 20 per cent. is excess of last year, Prices are 25 per cent. less.

Fuller details from Russia show that the affects of short crops in that country are much aggravated by the harsh treatment of the Hebrew population, who have heretofore advanced money to agriculturists to assist in gathering the havest. This year the Jews have been making very few advances and have sought rather to convert their property into money that could be concealed from spoliation and be carried with them in their exile. The result is that in many large districts grain perishes in the fied, in the absence of purchasers.

The total business of Charleston, S. C., for the year just closed shows a net increase of $17,935,001 over the trade of 1889–90. The total trade of the city for the years 1890–91 was $98,554,001, as compared with $80,619,717 in 1889–90. Five years ago the trade of Charleston amounted to $66,948,552.

The new steel steamer Dunmurry, which foundered off Halifax in consequence of the shifting of her cargo of grain, while going from this port to Antwerp, was specially built about a year ago for the transportation of a large consignment of Baldwin locomotives to Sydney, N. S. W., but was so much damaged in her first encounter with a gale that the charter was canceled.

The Iron Age

New York, Thursday, September 10, 1891.

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The Defeat of the Amalgamated Association.

In its contests with Eastern mills, during this summer, the Amalgamated Association of Iron and Steel Workers has been signally defeated, and in a short time the last of the strikes will be brought to an end. The association singled out a number of works in the Lehigh and Schuylkill valleys and Central Pennsylvania in its efforts to gain a foothold east of the Allegheny Mountains. It met with determined opposition. The struggle began with Pencoyd, it was extended to Pottsville and Norristown, and culminated in the strikes at Catasauqua, Steelton and Lebanon. In every case the fight involved the principle of the recognition of the union, which Eastern manufacturers, with the history of labor disturbances in the Western trade before them, knew to be the commencement of a long train of unreasonable demands. So long as the mill owners of Eastern Pennsylvania possess the ambition to supply markets west of the Alleghenies, and expect to retain those of the East, they must remain free from the dictation of the Amalgamated Association. They can live only where they can command their labor at prices sufficiently below those of the West to counterbalance many natural advantages which their rivals in that section of the country possess.

It is safe to assume that the Amalgamated Association undertook these contests because there was general peace in the West, where they had only a number of individual contests on their hands. No one at all familiar with the condition of the iron trade during the past year will deny that the time was very poorly chosen. None of the mills were crowded with orders upon which the owners had any reasonable expectation of making large dividends. Not one of them was so placed that its contracts could not be conveniently filled by others. The markets did not in the slightest degree show a tendency to advance, which has been so irresistible a temptation to break loose from the ranks of manufacturers who enter such a contest. Some of the manufacturers have suffered. It has cost them money to make the fight, but we question whether victory has ever been so cheaply bought by the employers, and defeat so dearly paid for by the employees.

It is well known how loyal the great majority of men are to the organizations of which they are members, but even that loyalty is severely shaken when bad generalship is shown. The Amalgamated Association was gaining a foothold among the men in the Eastern works. The number of lodges was increasing and their membership was growing. But only a portion of the whole number of employees had been gathered into the fold. The happenings of the past few months must have thoroughly discouraged those who entered the ranks, and must have had a very serious deterring effect upon those who were hovering on the outskirts of the association ready to join it in the case of victory.

Eastern manufacturers may feel confident that for some time to come the machinations of the Amalgamated Association will be the source of little trouble to them, particularly since the organization will have all it can attend to to keep its affairs in order in that territory which it has so long considered a conquered province. The number of non-union mills has grown rapidly in the West during the past two years.

Barb Wire and Wire Nails.

The present temper of the public mind is so strongly opposed to trusts and combinations that the Columbia Patent Company could hardly expect to carry out their project of controlling almost the entire output of the barb-wire factories of the country without exciting hostility. The presumption is quite natural that with the control of the trade practically in their hands the managers of the company may at the first favorable opportunity advance prices very considerably. In the hope of allaying apprehensions on this point they have repeatedly stated that it is not the intention of the company to use their power in this way, but on the contrary prices are to be kept at a reasonable figure in pursuance of sound business policy. The candor of the managers is not questioned by those who know them, but the public generally can only be convinced by facts as they develop with the flight of time. Thus far their course is regarded as eminently conservative by prominent merchants whose interests are by no means identical with the Columbia Patent Company.

Among merchants there is a difference of opinion with regard to the course of the barb-wire manufacturers who will hereafter market their product through the Columbia Patent Company. Some denounce the whole scheme, as they are opposed to all efforts by manufacturers to effect a mutual agreement upon prices. General discord and demoralization would be far preferable to them. Others, however, and among them are some of the most progressive merchants, who are naturally leaders in trade, are disposed to regard the new arrangement with favor. They do not seem to fear an unreasonable advance in prices, as there are too many influences which would then be brought into play to work mischief to the concerns interested in the Columbia Patent Company. They are, however, strongly inclined to favor anything which will bring about some uniformity of rates and give some stability to prices. For years the condition of the barb-wire trade has been such as to puzzle the shrewdest buyer. Contracts for stock have been made under presumably favorable terms, which were found shortly after to be considerably higher than would be made by a competing manufacturer. The buyer was thus almost compelled to resort to all kinds of commercial strategy to test the situation of the makers before he placed an order for even 50 tons, lest his house be caught with dearer wire than its competitors. On the other hand the sales department of the same house was often in a condition of perplexity with regard to selling prices, as there could be no standard. More than one merchant has cut his own price when there was probably no necessity for it, merely because he found that a lower price was being quoted by his neighbors. At even this early day in the operations of the Columbia Patent Company there is a notable stability in rates, which is being referred to with approval by numerous merchants.

Consumers are more interested in another side of this question. While there seems to be little danger of their being compelled by manufacturers to pay exorbitant prices for barb wire, the chances are very strongly in favor of the retention of low prices on wire nails. Some of the largest barb-wire makers are also wire-nail makers. The further expansion of the barb-wire trade is regulated by the company controlling the barb-wire patents, but there is no such control over the wire-nail trade. The enlargement of wire-nail factories can proceed indefinitely, and as mixed carloads of barb wire and wire nails are called for by a very large part of the hardware trade, it would appear that the barb-wire manufacturers are quite advantageously situated to wield great influence in the wire-nail trade. They largely draw their own wire, and to a great extent roll their own rods also, and are therefore equipped to compete with the exclusive wire-nail manufacturers. Under such circumstances it would seem that wire nails must remain cheap, except, of course, at rare intervals when the demand is in excess of the supply.

The Armor Question in 1891.

In the Naval Annual for 1891, just issued by the United States Office of Naval Intelligence, no subject will be found of greater interest to the readers of *The Iron Age* than that contained under Chapter VI, entitled "The Armor Question in 1891."

The development of armor has been principally induced by a continued increase in the power of guns and in the quality of projectiles. Before 1887 the energy of the projectile upon striking an armor plate was usually expended in making fractures and breaking up the projectile. Since that date, however, such improvements have been made in the quality of metal and in the processes of manu

facture that nowadays a projectile frequently succeeds in making a clean hole without accompanying cracks. But the improvement in the quality and manufacture of the projectile has been relatively much greater than in armor. Armor-piercing projectiles are now produced of such superior toughness and temper as to readily pierce compound and steel plates without breaking up or even suffering deformation. With such projectiles an approximate method of comparing the resisting powers of different plates to penetration can be conscientiously made.

For the sake of comparison, the energy required to just send a projectile completely through a wrought-iron plate of a certain thickness may be called 1, and the energy necessary to cause a projectile of the same dimensions to just perforate a compound or steel plate of the same thickness without deforming the projectile or fracturing the plate may be called 1.30, or 30 per cent. greater than that required with the wrought-iron plate. Then, using the wrought-iron plate as a standard, the compound or steel plate will possess 30 per cent. greater resisting power to penetration. It must be remembered that in all cases armor trials are conducted under conditions unfavorable to the plate. The gun is given every advantage, a steady platform and a normal impact at a short range on an immovable target, rigidly braced so as to receive the full effect of the energy stored up in the projectile. Such conditions cannot be expected at sea, and so penetration tables are not to be relied on as giving a correct amount of perforation in well-backed ship's armor.

Compound plates depend for their resistance on the hardness of the steel face and the perfection of its weld to the wrought-iron back, this soft back giving but little additional power of resistance. From the numerous trials in which the hard steel faces were scaled off, it is evident that the welding cannot be depended on. Against brittle projectiles compound armor is efficacious, but not against the armor-piercing shot of the present day. The trials also showed that there was an inclination in compound plates to give or bend at the point of impact. This was indicated not only by the extent of the bulging of the back, but also by the concentric cracks about the shot holes. Hence a rigid backing is essential to the good performance of these plates, but such rigidity cannot be obtained with armor attached to the side of a ship.

In the earlier trials with armor plates of all steel the superiority of the metal to compound armor was clearly demonstrated. The resisting power of steel depends on its qualities as a mass, so it is reasonable to suppose that its efficiency as a means of protection against penetration will increase with increased thickness.

Probably the most important and conclusive armor trials ever undertaken were those carried out by the Russian and United States naval authorities during the past year. They are of value not only because of the definiteness of the results obtained, but also because in each case the plate which fairly carried off the honors of the contest was neither the compound nor the all steel, but one of an alloy of nickel and steel. The Russian trial at the Ochta naval battery took place last November. Three plates were fired at—a Brown (English) compound plate, a Vickers (English) all steel plate and a Schneider (French) nickel-steel plate. Each plate was 8 feet square by about 10 inches thick, and of a weight of about 11.7 tons, and was hit five times. The result of the trials was that the compound plate was completely outmatched. The penetrations were deepest and the plate was badly fractured. Had it been on a ship's side the large amount of bulging of the back would have seriously injured the framing behind it. The all-steel plate of Vickers did comparatively well. At one shot the back of the plate was bulged badly. The remaining shots did not have this effect to so great an extent, but instead the metal was clipped out around the shot holes. The plate was through-cracked, but the pieces held together even when the plate was removed from its backing. The nickel-steel plate proved somewhat disappointing. It was cracked through more than the all steel plate, and when removed from its backing—like the compound plate—it had to be banded together to prevent its falling to pieces. But there was so little bulging of the plate that had it been on a ship's side it would have afforded the best protection and done no injury to the ship's construction behind it. As a result of the above tests Schneider was given an order for 2100 tons of nickel-steel armor, and Vickers one for 300 tons of steel plates from 3 to 5 inches thick.

The Annapolis trials took place in September, 1890. They were fully described and illustrated in *The Iron Age* at the time, but are briefly referred to again, as they are given in detail in the "Annual," and also as they form a necessary part of the armor question in 1891. Three plates were fired at—a Cammell compound, and an all steel and a nickel steel, both from Schneider. The mean thickness of the plates was about 10.5 inches, and the weight of each about 20.8 tons. Five shots were fired at each. Summarizing the results it was found that the compound plate was perforated by all the projectiles and its steel face was destroyed. Two projectiles passed completely through both the plate and the backing. Both the steel and the nickel-steel plates kept out all the projectiles, the all-steel plate showing slightly greater resistance than the nickel steel, but by some of the shots the former was badly cracked, while the latter remained uncracked.

Armor is put on ships to protect the working and fighting material and the *personnel* behind it from the destructive effects of an enemy's projectiles, and to do this properly it must resist penetration and fracture. If a plate resists penetration, but is fractured so that part of it falls off, its value as a protection is gone. It is for this reason that all steel is inferior to nickel steel, the former through-cracking. This is a prominent feature in all armor trials, though it seems to have but little influence on penetration. If in the trials of the future nickel-steel plates give as good results as those detailed in the book before us, it will be proof positive of the decided superiority of this metal for armor protection as applied to ships. The principle upon which compound armor is based—a hard projectile-breaking face and a graduated resisting back—is a good one, but the manner of applying it in English compound plates is radically bad. Great efforts, therefore, are making to harden the face of the nickel-steel plate by processes of superficial carbonization, and the experiments in plates thus treated by the Harvey process indicate that in time the results will be satisfactory, and thus will be produced that great desideratum, an effective protection for ships.

Electrical Transmission of Power.

An achievement of extraordinary interest has been accomplished through the success, announced by cable to the *Electrical World*, of the transmission of power by electricity from Lauffen on the Neckar, near Heidelberg, to the Frankfort Electrical Exhibition, the distance being 180 km., or about 112 English miles. It is claimed that the efficiency of transmission is 75 per cent. Should subsequent reports verify this exceedingly favorable showing, manufacturers and engineers will be called upon to seriously consider the changes which such a revolution is sure to bring about. In fact, the suggestion lately thrown out, that some of the power to be used at the Columbian Fair at Chicago be obtained by the utilization of the power of Niagara, does not seem at all impossible of fulfillment.

The work on the long line referred to has been done by the Allgemeine Elektrizitäts-Gesellschaft of Berlin, in connection with the Oerlikon Works of Zürich, the latter having built the generator, the motor and two transformers, in accordance with the designs of C. E. L. Brown, while the former furnished two transformers devised by Von Dovilo-Dobrowolsky. The generator is a three-phase machine, capable of delivering three separate alternating currents of 50 volts and 1400 ampères. These currents are not sent directly to the line, but are passed through step-up transformers, the secondary of which is connected to the line. The alternating current, which has the high pressure of 13,000 volts, reaches the final station, there being three line wires instead of two, as usual. Unfortunately, none of the electrical journals which have come under our notice gives the size of the wires, so that no conception can be formed of the quantity of copper required, and, therefore, the magnitude of the capital outlay. The currents sent along the line are utilized in the motor by step-down transformers.

It does not, of course, follow that the technical success of very long distance transmission of power by electricity neces-

sarily involves claims to commercial supremacy. The high potentials of the alternating currents used mean that the size of the conductors, and, therefore, the capital outlay for the plant, is not as great as was expected only a short time since. Still, local circumstances must dictate the location of power plant and mill plant. The fact that the one can be divorced from the other in a manner till now rarely attainable will make water power available where it has not been hitherto used.

In certain localities in this country electric transmission of power promises to become of particular importance. We need only refer to Buffalo, and to Duluth and Superior, with the Dalles of the St. Louis River at reasonable distance.

Southern Pig-Iron Freights.

The Southern Railway and Steamship Association have issued a new sheet of rates of freight which went into effect on September 1.

Rates of Freight on Pig Iron in Carloads of not less than 17½ Tons. Per ton of 2268 Pounds.

From / To	Chattanooga, Tenn. * Cedartown, Ga. * Rome, Ga.	Anniston, and Shelby district.	Sheffield, Ala. Florence, Ala.	† Birmingham district.	Dayton, Tenn. Rockwood, Tenn.
Boston, Mass., and Providence, R. I.	4.50	4.61	4.71	4.50	4.65
New York, N. Y.	4.15	4 26	4.36	4 15	4 30
Philadelphia, Pa	4.15	4.26	4 36	4.15	4.30
Baltimore, Md.	4.00	4.11	4.21	4.00	4.15

* Rates from Rome and Cedartown effective September 5, 1891. † Subject to an additional charge of $2 per car for switching. The foregoing rates apply only via rail and water lines To make all-rail rates, to Philadelphia, Pa., add 30 cents per ton to the rail and water rates. Baltimore, Md., add 25 cents per ton to the rail and water rates. Jersey City, N. J., add 60 cents per ton to the rail and water rates to New York, N. Y.

The National Tube Works.

An entirely erroneous impression has been created by the reports in the daily newspapers on the consolidation of a number of allied concerns with the National Tube Works. These concerns are the Monongehela Furnace Company, who have two large modern blast furnaces at McKeesport, the Boston Iron and Steel Company, a puddling mill recently erected, the Republic Iron Works, South Side, Pittsburgh, a puddling, scrap and plate mill, and the National Tube Works Company, with puddle mills, plate trains and pipe works. In all these concerns the same persons were interested, and the management was the same, so that the reorganization is only a consolidation of practically identical interests.

The company are incorporated under New Jersey laws, and as now organized the capital stock is $11,500,000, of which $5,750,000 is cumulative preferred stock and the balance is common stock. The capital stock of the old National Tube Works was $3,000,000. E. W. Converse of Boston is president of the new corporation; D. W. Hitchcock, vice-president; W. S. Eaton, treasurer; A. F. Luke, assistant treasurer; P. W. French, secretary, and E. C. Converse, general manager. Among the directors are Horace Crosby and W. J. Curtis of Sullivan and Cromwell, N. Y., respectively; J. H. Flagler of New York and F. E. Sweetser of Boston.

Puddling by the Rose Process.

The National Heat and Power Company of Philadelphia have been making experiments during the last two years at the Bellefonte Iron and Nail Company's mill, Bellefonte, Pa., in pudding iron with fuel gas made by the Rose process, and finally have succeeded in solving the problem to their satisfaction. During the week ending August 29 they puddled 40,950 pounds of iron with a consumption of 359,543 feet of gas. This represents all the gas burned during the week, including the amount used in keeping the furnace hot between turns, the mill only running double turn. This is an average of 19,600 feet to the ton of iron. Some remarkable work was done during this run. For instance, one heat (1050 pounds) was puddled with 5230 feet of gas, and several heats with less than 8000 feet each. The cost of gas per 1000 feet, with coal, $1.56; coke, $2.25 per ton, and oil 2½ cents per gallon, was 6⅝ cents. With fuel at Pittsburgh prices, it can be produced for 5 cents per 1000 feet, thus bringing the cost of puddling down to $1 per ton. These features can be verified. Messrs. Carnegie, Phipps & Co., Limited, sent T. R. Lee, mechanical engineer, Pittsburgh, to make a thorough investigation of the process. After making a test extending over a period of five weeks, he made a favorable report, and upon the strength of this they have secured the right to use the Rose process in all of their mills, and have ordered a plant with a capacity of running six puddling furnaces erected in their Upper Union Mills, Pittsburgh, at once, upon the completion of which they will give it a thorough test in puddling and heating furnaces with a view of adopting it for use in all their furnaces.

The National Heat and Power Company, 419 Walnut street, Philadelphia, of which General D. H. Hastings is president, control the patents. They claim to make a fixed gas that can be piped any distance, and with the addition of 1½ gallons of Lima oil to the 1000 feet, to make illuminating gas of 20 candle power. If these are facts our iron industries will be able to get a substitute for natural gas, and will be saved the trouble and expense of returning to coal as a fuel.

The Eureka Steel Car Coupler Company have just completed arrangements with the Alliance Solid Steel Casting Company of Alliance, Ohio, to manufacture the Eureka coupler entirely of cast steel. This includes the knuckle as well as the head, and the contract provides for the erection of the couplers and delivery to the coupler company ready for service. These couplers are to be built under a strict contract, and the steel company will be held closely to specifications and tests. The new coupler weighs complete 185 pounds and is now being tested at the Chicago and Northwestern testing department to determine its strength to resist both pulling and compression loads.

Jones & Laughlins, Limited, of Pittsburgh and Chicago, have issued circulars descriptive of the Larimer all steel column. Cuts are given, showing the method by which the column is made and how connections are fastened to it. These latter include brackets for iron or steel girder, collars for tie rods and other purposes, and supports for wooden girders. Accompanying the cuts are tables of strength based on one-fourth of the ultimate strength of the column, calculated for lengths running from 14 to 40 feet, and covering 7-inch to 16-inch columns. In each case the weight per foot is given.

San Francisco News.

There has been a slight revival of business in hardware and merchant iron during the past week or so, and we expect that September will be a good month in almost every line. Country orders are now beginning to arrive in greater number and of larger volume individually than for some time past. Business is better than it was a year ago at this time, although a business of that character is decidedly not satisfactory. Most of the houses—that is, the leading ones—of this city have now branch houses in other leading centers, such as Sacramento, Stockton, Los Angeles, Portland, Seattle, &c. This has to be done in order to hold the trade. There is, however, one conspicuous exception to this in Huntington, Hopkins & Co., who, after a quarter of a century, have dispensed with their Sacramento house. It must not be supposed, however, that this house has any connection with the famous firm that built the Central Pacific. It is managed by Albert Gallatin, who long ago succeeded to the honors and emoluments in the hardware line of this famous firm. The house is one of the greatest in its line in America.

I have noted a revival in the hardware and merchant-iron trade. This, however, is not true of the trade in pig iron. Here the importers have been having a bad quarter of an hour. During the year freight from England suddenly dropped from 14/ and 15/ to 5/, and allowed of the importation of pig iron from England at a much lower rate. The result has been that the market has been lower than for a long time past. It has indeed been quoted at $23 to arrive and $25 spot, but sales to arrive have been made as low as $20—the lowest, so far as I know, ever heard of in this market. This, of course, has resulted in loss to all who had stocks on hand when the drop came. The imports of pig and scrap iron, including Pacific Coast iron, for the seven months ending August 1, were 18,457 tons; for the same time in 1890, 17,441 tons.

The action of the Pacific Rolling Mills lately has given rise to a good deal of talk. A contract was entered into with the people who are building the Los Angeles system of electric roads to furnish the equipment of said roads for the sum of $1,000,000, of which $250,000 was to be paid in cash and the balance in bonds of the road. This was not very pleasing to some of the large stockholders, and for some time a rumor was current that the rolling mill people were about to throw up the contract, and that there were serious differences among them. Most of this was, however, newspaper talk, and though there was some dissatisfaction at taking the bonds of the road in lieu of money, the contract will be completed. The Pacific Bank of this city, as also the People's Home Savings Bank, were interested in the Electric Road bonds, but they have sold out. The Electric Road corporation has been trying to accomplish the feat of swallowing the Los Angeles cable system, which is in the hands of a receiver. The receiver, however, wants $2,000,000, so as to satisfy first and second mortgage bonds. It is probable, however, that a compromise will be arrived at by which the electric people will get hold of the cable roads at a less figure. The rolling mill is in the market for about $500,000 bonds, which will be readily taken up. This will make $1,000,000 of bonds paid, but a large number of the old ones has been taken up. The new bonds have been necessary to satisfy an overdraft of the same amount on the California Bank. The value of goods turned out annually is about $1,500,000. Referring to the rolling mill, one of the most important of our industrial institutions,

brings up the subject of machinery, the struggle for the trade of the coast on which is the leading element in the molders' fight, as owing to the causes that gave rise to it our foundrymen in many instances found themselves being driven to the wall. The value of the machinery imported to this city for the past three years has averaged about $1,000,000 annually. Previously it was much less. The value of that exported by sea from this city in 1890 was $859,896, an increase of about 70 per cent. in seven years. In another letter I will send you some information as to the markets for it. The figures here given relate entirely to exports to foreign countries and not to shipments coastwise to Oregon or Washington.

Imports by rail during the past two weeks have been quite large; 112 carloads, including 24 cars of iron, 13 of wire, 12 of steel, 12 of hardware, 10 of stoves, 5 of agricultural implements, 5 of pipe, 4 of machinery, 3 of rails, 3 of old rails, 2 each of steel plates, girders, scrap iron and plows, and 1 each of wire netting, sheet iron, ranges, safes, iron plate, road scrapers, wheelbarrows, steel rails, steel sinks, wire rope, pulleys, carbon and steel beams. There have been considerable imports by sea, including 250 tons of pig and 560 tons of scrap iron.

Pig tin continues quiet at 21¼ cents; tin plate at $6.75. By rail we have had during the past two weeks 1844 boxes of the latter. By rail we have had also 36,650 pounds copper, 34,492 pounds zinc and 1555 kegs of nails.

Growth of the Ports.

The census returns just coming to hand are instructive. It is shown that in common with interior cities the seaports on the Atlantic and Gulf coasts feel the impetus of a trade increasing in value and volume from year to year, and the annual statistics which have been collated from the latest census returns, considered in connection with the enormous movement of grain and cotton which is now fairly under way for the current year, permit some interesting comparisons. While Philadelphia, Boston and Baltimore compete with New York in a struggle for the largest share, and are quick to detect "discrimination" if railroads fail to secure their supposed full quota of freight, the whole group of Southern ports are not less in earnest in striving for supremacy. As usual New York leads far in the advance, and her preponderance was never more apparent than of late, she having handled during the last six or eight weeks within a fraction of 50 per cent. of the entire foreign trade of the country. Boston and Philadelphia show only a moderate increase, hardly holding their own, while Baltimore on account of her improved terminals and trunk line facilities boasts of a decided advance, particularly in grain exports. Newport News is gradually making for herself a name among the seaport towns for like reasons, partly at the expense of Norfolk. Charleston and Savannah are the two Atlantic ports that have chiefly benefitted from the enormous expansion of the cotton trade, gaining $18,000,000 and $19,000,000 respectively in their aggregate trade and commerce for the year. Charleston's total is $98,500,000, compared with $67,000,000 five years ago. Savannah seems to have made extraordinary gains, not only in cotton, but lumber and naval stores. The tonnage entering and clearing the port exceeds 2,000,000 tons, an increase for the year of 185,000 tons. Foreign exports increased over $3,000,000. Next year Savannah will be the terminus of six trunk lines.

New Orleans, however, is still the great port of the South, despite the rise of Galveston and other dangerous rivals. She confesses to have secured less of cotton and grain than she expected, but claims to have improved in every line. The total receipts of domestic produce by river, rail and canal amounted to $208,935,400, as against $193,147,121 the previous year, an improvement of $15,788,879, and $178,704,621 in 1888–89, an improvement in two years of $30,230,779, or 17 per cent.

New Orleans foreign trade also shows improvement. There is a slight increase in foreign exports and a larger one in imports, comparing as follows with last year's returns:

	Imports.	Exports.	Total.
1890–91...	$20,921,207	$109,022,979	$129,944,186
1889–90...	14,225,400	108,294,836	122,520,230
Increase..	$6,695,807	$728,143	$7,423,956

The coastwise trade has improved still more. Two years ago the coastwise vessels arriving at New Orleans showed a total tonnage of 388,139 tons. In 1889–90 this increased to 407,035 tons and for the year just closed to 528,667. The railroad business improved, but not to the same extent, the aggregate freight forwarded and received having been 3,555,000 tons, an increase of about 1,000,000 compared with the previous year. The river business comprised 1,356,000 tons, valued at $55,000,000, showing a small decline.

As the importance of the great city lying at the delta of the Mississippi River is not universally known, the following tabular statement showing the aggregate amount of exports and imports, together with the interior and coastwise trade, is worthy of examination:

Receipts of Domestic Produce.

	Tons.	Value.
By river	1,356,290	$55,335,870
By rail	2,064,516	153,599,530
By canal	300,000	
Total from interior	3,720,806	$208,935,400
Receipts by Ocean.		
Coastwise	526,687	$66,586,900
Foreign	518,477	20,921,207
Receipts from interior	3,720,806	208,935,400
Receipts by ocean	1,045,164	77,508,117
Total receipts	4,775,970	$296,443,517
Shipments.		
To interior:		
By rail	1,493,226	$137,875,000
By river and canal	950,000	
Exports coastwise	533,206	39,252,500
Exports foreign	777,244	109,022,979
Total shipments	3,753,676	$286,150,279
Total receipts	4,775,970	296,443,517
Total commerce of New Orleans	8,529,646	$582,593,796

The New Orleans *Times-Democrat* says: "A commerce of nearly $600,000,000 and over 8,000,000 tons a year is one to be appreciated. It places New Orleans among the dozen leading ports of the world."

It appears at least that ambitious rivals have not yet succeeded in effecting a great diversion of trade.

Letters from Chicago affirm that a "corner in corn" is being attempted by speculators, involving many millions of bushels. One account says: "Corn is arriving at the rate of almost 4,000,000 bushels a week, and is all being taken by the September clique at prices over 65 cents. There is every reason to believe that this combination has already been compelled to take 6,000,000 bushels at high prices, and there is every prospect that it will be compelled to take during the next three weeks at least 6,000,000 more. Arrangements to ship 5,000,000 bushels to New York, mostly for export, are said to have already been made.

The University of Wisconsin announces an increase in the force of instructors in the College of Mechanics and Engineering and enlarged facilities. Three new chairs have been added, namely, Railroad Engineering, Electrical Engineering and Machine Design.

PERSONAL.

Moritz Boeker, a manufacturer of crucible steel at Remscheid, Germany, is now traveling in this country.

John Reis has resigned his position as manager of the Alice Furnaces of the Tenn. C. I. & R. R. Company. Before leaving Birmingham on Monday, 31st ult., Mr. Reis was presented with a gold watch and chain by the employees of the company. Suspended to the chain was a heart shaped locket, mounted with a single diamond. The company, through N. W. Hillman, expressed great regret at losing Mr. Reis, and wished him joy and prosperity in his new field of labor at Middlesborough. Mr. Reis responded in fitting terms. He goes immediately to take charge of the two blast furnaces of the Watts syndicate at Middlesborough.

George W. Bryan, for a number of years manager of the Fifteenth Street Mills of the Oliver Iron and Steel Company on the South Side, Pittsburgh, has resigned and accepted a similar engagement with the Ashland Steel Company, now building a Bessemer steel plant at Ashland, Ky.

E. C. Crowther has resigned the superintendency of the charcoal furnace of the Lone Star Iron Company, Jefferson, Texas.

Stationary Pig Production.

Considering the large number of active furnace plants and their great aggregate capacity, the changes during the month of August have been few and unimportant.

The weekly product of all the furnaces on September 1 compared as follows with that of preceding periods:

	Furnaces in blast.	Capacity per week. Gross tons.
September 1	299	170,846
August 1	296	169,576
July 1	293	171,115
June 1	258	146,782
May 1	227	115,590
April 1	228	113,483
March 1	257	134,526
February 1	294	146,050
January 1, 1891	302	167,599
December 1, 1890	340	183,846
November 1	342	177,958
October 1	336	179,263
September 1	323	171,776
August 1	324	164,798
July 1	336	175,727
June 1	345	180,791
May 1	344	180,099
April 1	344	178,474
March 1	343	180,991
February 1	334	173,661
January 1	333	174,038
December 1, 1889	328	169,151
November 1	323	165,225
October 1	311	151,057
September 1	294	134,068
August 1	286	145,899
July 1	285	141,419

The position of the anthracite furnaces was as follows:

Anthracite Furnaces, September 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New York	19	7	2,591	12	3,778
New Jersey	12	3	1,190	9	2,913
Spiegel	3	3	209	0	0
Pennsylvania:					
Lehigh Valley	47	29	10,382	18	7,580
Spiegel	1	1	55	0	0
Schuylkill Valley	30	16	6,819	14	4,532
U. Susquehanna Valley	18	6	2,043	12	2,415
L. Susquehanna Valley	17	9	3,080	8	3,560
Lebanon Valley	16	8	4,845	8	2,134
Totals	163	82	31,214	81	26,912

For a number of months past our records show the following:

	Furnaces in blast.	Capacity per week.
September 1	82	31,214
August 1	88	32,860
July 1	92	37,892
June 1	91	36,561
May 1	90	35,331
April 1	91	36,598
March 1	93	38,543
February 1	95	40,212
January 1	101	43,166
December 1, 1890	105	43,474
November 1	104	42,141
October 1	100	38,627
September 1	104	39,115
August 1	106	41,013
July 1	112	42,543
June 1	117	45,142
May 1	123	46,912
April 1	119	46,110
March 1	115	45,790

Among the anthracite furnaces which have blown out are Franklin, in New York, one Bird Coleman, two Cornwall Anthracite and Lebanon Valley, in Pennsylvania. The Thomas Iron Company have blown in their sixth Hokendauqua. Vesta started on the 18th ult., and Colebrook has both furnaces running.

The position of the coke furnaces was as follows on the 1st inst.:

Coke Furnaces, September 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New York	6	3	3,492	3	2,085
Pennsylvania:					
Pittsburgh district	25	22	31,159	3	3,262
Spiegel	1	1	4,321	0	0
Shenango Valley	18	15	11,036	3	1,408
Juniata and Conemaugh Valley	19	9	5,331	10	3,359
Spiegel	1	0	0	1	400
Youghiogheny Val	5	2	1,486	3	1,132
Miscellaneous	4	2	1,632	2	1,142
Maryland	4	3	3,370	1	1,540
West Virginia	4	3	2,620	1	470
Ohio:					
Mahoning Valley	15	11	9,826	4	1,850
Central and Northern	16	11	9,654	5	4,270
Hocking Valley	14	4	1,431	10	2,527
Hanging Rock	15	10	1,909	5	1,832
Indiana	2	1	158	1	223
Illinois	18	13	14,400	5	5,150
Spiegel	11	1	1,000	0	0
Wisconsin	4	3	2,200	1	572
Missouri	6	1	580	5	2,760
Colorado	2	1	468	1	450
The South:					
Virginia	14	10	5,872	4	1,508
Kentucky	4	3	848	1	400
Alabama	37	20	12,980	17	9,787
Tennessee	12	10	4,962	2	850
Georgia	2	1	693	1	308
North Carolina	1	1	125	0	0
Totals	250	161	127,664	89	46,755

As compared with previous months, the active coke furnaces make the following showing:

	Furnaces in blast.	Capacity per week.
September 1	161	127,664
August 1	154	125,736
July 1	150	122,422
June 1	124	100,165
May 1	98	70,529
April 1	96	67,570
March 1	113	85,093
February 1	125	94,473
January 1, 1891	143	112,153
December 1	168	127,634
November 1	168	122,555
October 1	170	127,247
September 1	156	119,757
August 1	150	113,040
July 1	163	120,673
June 1	167	123,340
May 1	169	122,489
April 1	173	121,560
March 1	169	122,595
February 1	169	118,568
January 1, 1890	169	119,396
December 1	162	116,319
November 1	160	112,269
October 1	154	102,454
September 1	141	96,744

There are few changes to record among the Pennsylvania coke furnaces. In the Shenango Valley Etna has been running the greater part of the month, while Sharon is out. The Cambria Iron Company have added to their current capacity by blowing in the sixth Johnstown furnace and one Blair. In Maryland Deborah Furnace started on the 12th ult. Bellaire, in Ohio, has been out since the 16th ult., and Akron and Winona are again running in the Hocking Valley. There have been no changes in the Mahoning Valley or in the Hanging Rock region. Missouri has again become a producer.

In the South we may note the stoppage of Gem Furnace in Virginia, and of one Alice in Alabama.

The position of the charcoal furnaces was as follows on the 1st inst.:

Charcoal Furnaces, September 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New England	14	5	410	9	620
New York	8	2	245	6	525
Pennsylvania	15	4	325	11	650
Maryland	6	2	210	4	385
Virginia	18	2	210	16	750
Ohio	10	8	608	2	125
Kentucky	1	1	104	0	0
Tennessee	8	4	1,131	4	410
Georgia	4	3	868	1	75
Alabama	13	5	1,295	8	1,540
Michigan	27	12	4,007	15	4,090
Missouri	2	1	276	1	293
Wisconsin	5	3	1,438	2	1,290
Texas	3	3	618	0	0
California	1	0	0	1	120
Washington	1	0	0	1	170
Oregon	1	1	226	0	0
Totals	137	56	11,968	81	11,043

As compared with previous months the record stands as follows:

	Furnaces in blast.	Capacity per week.
September 1	56	11,968
August 1	54	10,980
July 1	50	10,801
June 1	44	10,056
May 1	59	9,730
April 1	41	9,295
March 1	51	10,890
February 1	56	11,365
January 1, 1891	59	12,280
December 1	67	12,738
November 1	70	13,262
October 1	66	13,389
September 1	68	12,904
August 1	59	10,745
July 1	61	12,511
June 1	61	12,312
May 1	52	10,698
April 1	52	10,804
March 1	59	12,606
February 1	58	11,378
January 1, 1890	59	11,485
December 1	66	12,779
November 1	67	12,893
October 1	63	12,047
September 1	60	11,327

The principal changes during August have been the blowing in of Boiling Springs, in Pennsylvania, of Olive, in Ohio, and Spring Lake, in Michigan. Lou Ellen, in Texas, resumed on the 1st inst., and Landon, in Connecticut, was to start on the 8th inst.

Electrical Industries prints tables embodying the information given in special reports of the central station lighting companies in North America. The number of arc lights reported is nearly 200,000, and of incandescent lights more than 2,500,000, for the operation of which nearly 500,000 horse-power is employed. The lights are distributed from 1850 stations, of which 1700 are in the United States, 134 in Canada and 16 in Cuba and Mexico. Comparison of the figures with those published by the same journal about a year ago shows that in round numbers the additions amount to 48,000 arc and 874,000 incandescent lamps, and the increase in the number of central stations to 357. Relatively, the gain is largest in the number of incandescent lamps, which seems to indicate that this branch of the lighting business is making most rapid progress. As a whole the exhibit is very flattering. Taken in connection with the fact that the tables cover only the lights supplied from central stations, which comprise but a part of the whole number in use, these figures afford an indication of the enormous proportions which this industry is rapidly acquiring.

There is already talk of new railroad construction in consequence of the better demand for all classes of railroad bonds. There is some construction which will no doubt soon be under way. If the Union Pacific plan of reorganization goes through, that line will no doubt finish its partially built road to Tacoma and the Puget Sound country. It is also said that the Chicago, Burlington and Quincy, which nearly exhausted itself in building lines out into the far Western prairies, will extend its lines to Helena. The Chicago and Northwestern also has a project of building an extension to Boise City, Idaho, with the intention of going to the Pacific Coast finally. The great earnings of railroads in the next nine months, it is believed, will be the basis of a revival of railroad building during the next two or three years.

It is shown by the Bureau of Statistics that of the 5,246,613 immigrants who have arrived since 1880, 2,646,552 have claimed a definite occupation, and nearly 600,000 were skilled laborers. Of those who had no occupation—2,600,061—only 253,062 were males over 15 years of age.

The Vulcan Iron Company, Limited, New Castle, Pa., have just finished building the largest sized annealing box that has ever been cast in this country. The box is 11 feet 6 inches long, 6 feet 6 inches high and 4 feet wide; it is strengthened with heavy ribs on the side and top and a deep molding around the base. The complete weight is 18,000 to 20,000 pounds, and it is said to be 2 feet deeper than the deepest annealing box now used in this country.

The estimated value of Argentine crops this season will be $60,000,000, of which $30,000,000 will be available for export. The probable yield of wheat will be 900,000 tons, of which 390,000 will be available for export, and the yield of maize will be 1,000,000 tons, of which one-half can be sent abroad. The exports by tons of four leading products for the years 1881, 1889 and 1890, are given as follows:

	1890.	1889.	1881.
Wheat	326,186	22,806	1,666
Flour	13,018	3,361	1,286
Maize	707,282	432,514	25,052
Linseed	30,721	28,196	8,390

The total value of cereals exported in 1889 is estimated at $16,429,288, as compared with $25,825,889 in 1890. There was a falling off in the importation of agricultural machinery last year, the receipts being 1035, as compared with 4088 in 1889, and there was a reduction of 12,687 in the number of plows imported.

The French line twin-screw steamer La Touraine illustrated the advantages of the double system of propulsion during her last trip. During a huricane the big ship was compelled to run at half speed. She pitched a great deal, and her propellers frequently whirred in the air as she rose on the crest of a mighty sea. The racing of the port propeller bent the eccentric rod of one of the port engines. The port engines were immediately stopped and three hours were spent in disconnecting the eccentric, taking it out and straightening it. Meanwhile the Touraine went ahead with her starboard engines, losing practically no time because of the accident. This is the first chance the Touraine has had to show the usefulness of twin screws in rough weather.

MANUFACTURING.

Iron and Steel.

The American Tube and Iron Company, manufacturers of wrought-iron welded tubes, are making a number of extensive additions and improvements to their plant at Middletown, Pa. In fact, the plant is being practically reconstructed, and fuel gas is being introduced to take the place of coal and coke.

In accordance with the agreement made among the directors of the Lancaster Iron Company at their recent meeting, held in Youngstown, Ohio, the plant situated at Lancaster, Ohio, is advertised for sale. It has been appraised at $42,500, and the advertisement states that the terms are cash on day of sale.

The entire plant of the Youngstown Bridge Company, at Youngstown, Ohio, was destroyed by fire on Thursday, September 3. The loss is estimated at $75,000, with an insurance of $60,000. Immediately after the fire a meeting of the Board of Directors was held and it was decided to rebuild the plant at once.

The auction sale of the interests of the late John H. Shoenberger in the Juniata Iron and Steel Works of Shoenberger & Co., and also in the furnaces of Shoenberger, Speer & Co., at Pittsburgh, which was advertised to take place in Pittsburgh on Thursday, September 3, was postponed until October 6, as no bidders were present.

The Pittsburgh Steel Casting Company of Pittsburgh have just turned out a large Bessemer steel rim which measures 15 feet in diameter. The casting in the rough weighs 24,000 pounds, and is one of the heaviest Bessemer steel castings ever made. The rim is intended for the driving wheel of the engine now being built by the Robinson-Rea Mfg. Company to drive the new mills which that firm are building for the United States Iron and Tin Plate Mfg. Company at Demmler, Pa.

The Mahoning Valley Iron Company of Youngstown, Ohio, have received a large order for hot polished shafting for shipment to Manchester, England.

The Alabama Rolling Mill Company of Birmingham, Ala., have just completed the erection of seven new puddling furnaces, making a total of 23 in the plant. They are also building a new gas furnace in the guide mill and adding new rolls to make T rails from 8 to 20 pounds in weight. The plant of the company will probably resume operations about October 1 next with a capacity of 75 to 85 tons of finished iron per day.

No. 1 furnace of the Crane Iron Company at Catasauqua, Pa., has been put out of blast for the purpose of relining and repairs. The furnace has been in constant operation for two years, and its yield for that period was largely in excess of the previous three years.

The Trethewey Mfg. Company have received an order for four additional pairs of hardened steel rolls for use in the Government Mint at Philadelphia. This firm have already supplied two previous orders to the Government for this quality of rolls. For the past 15 years all rolls used by the Government in the different mints throughout the country have been purchased in Germany, owing to the inability to procure rolls of sufficiently smooth surface to do the fine work required. This difficulty has been overcome by the Trethewey Mfg. Company, as evidenced by the fact that they are the only firm in this country that are supplying rolls to the Government to be used in the mints. This firm shipped on Saturday, September 5, an open front steam hammer to the Southern Pacific Company at Algiers, La. The total weight of the hammer was 17,000 pounds.

The Economite Association of Economy, Pa., through their trustee, Jno. Duss, have purchased the interests of H. W. Hartman and T. D. Ganse in the Union Drawn Steel Company of Beaver Falls, Pa. Immediately after the sale was made a meeting of the company was held and Jno. Duss was elected president, Frederick Beegle secretary and C. R. Wilie treasurer. It is the intention of the new company to enter into the business of manufacturing cold-drawn steel more extensively than ever.

Jones & Laughlins, Limited, of Pittsburgh, have been doing some excellent work recently in their steel department. In one week they made 4237 tons of Bessemer billets, the best daily record of the week having been 845 tons.

The rolling mill and the nail factory of the Mount Hope Iron Works at Somerset, Mass., started up on the 8th inst.

The Lukens Iron and Steel Company of Coatesville, Pa., are about to erect an open-hearth steel plant, consisting of two 15-ton acid open-hearth furnaces of the standard Siemens type for the manufacture of ingots for their plate mills. They expect to have the plant in operation in about six months.

The West End Rolling Mill Company of Lebanon, Pa., have increased their capital stock from $80,000 to $100,000.

Singer, Nimick & Co., Limited, proprietors of the Sheffield Steel Works, at Pittsburgh, are adding a new mill to their plant for the rolling of extra long band saws. The new department will be put in operation in a short time, as it is now almost completed.

The annual meeting of the stockholders of the Pittsburgh Mfg. Company of Pittsburgh was held in that city last week. The old Board of Directors and officers were re-elected.

Some weeks since we noted the fact in these columns that the Oil Well Supply Company, Limited, of Pittsburgh had purchased the plant of the Elba Iron and Bolt Works in that city, and would put the same in operation as soon as some necessary repairs and improvements had been completed. Last week the 8-inch and 10-inch mills were started up and are now turning out skelp iron, which will be worked up into pipes and tubes by the Oil Well Supply Company, Limited.

The mills throughout the iron-works district at Troy, N. Y., are gradually being advanced to full operation. On the last day of August train No. 2 at the Burden Mills was started, and over 200 additional men were put to work. At the Albany Iron Works and the Bessemer Steel Works the departments are running full. The starting of the puddling department of the Albany Iron Works has given employment to a number of idle men.

The Norristown Steel Company of Norristown, Pa., had their first heat of steel castings on the 3d inst. The start was successful. G. J. Humbert is superintendent of the new company.

Machinery.

Quite a material reduction has been made in the wages of the skilled mechanics in the employ of the Westinghouse Air Brake Company, at Wilmerding, Pa. All the employees of this firm outside of day laborers are working piece work, and during the time the plant was in operation only four days a week, it is claimed the men made a full week's salary, and only worked four days per week. This has resulted in a scaling down of prices paid for piece work which amounts to a reduction of from 10 to 33⅓ per cent.

In our issue of last week mention was made of the granting of a charter to the Avonmore Foundry and Machine Company of Pittsburgh, which concern has been organized and will erect a plant at Avonmore, Pa. W. A. Cochran, formerly president of the Leechburg Foundry and Machine Company of Pittsburgh, has severed his connection with that firm, and will give his entire time to the new enterprise. The company have secured a site of 10 acres, and their works have a floor space of 21,000 square feet. Their plant will be especially adapted to the manufacture of ingot molds of all sizes, rolling mill and steel works machinery, and will have a capacity of turning out 100 tons of castings daily. The foundry and machine shop will be equipped with four overhead traveling cranes of 15 tons capacity, with wire rope transmission of power, besides all other necessary machinery. They have also let contracts for a planer to plane 96 inches wide, 72 inches high and 20 feet long; a lathe to turn 52 inches diameter by 16 feet long; another to turn 32 inches diameter by 10 feet long; an 84-inch cupola; 120 horse-power engine and all other necessary equipments. Contract for the buildings has already been let, and the company expect to be in operation not later than November 1 next.

At Kingston, N. Y., the Peckham Street Car Wheel and Axle Company, who have recently been reorganized as the Peckham Motor Truck and Wheel Company, have been forced to more than double their plant by a recent increase of business. They expect to have facilities during the coming year for manufacturing at least 500 trucks. The plant includes a large blacksmith shop and machine shop, and will have about 60 hands.

Work on a hammer shop, a producer house and a boiler house to be added to the Boies Steel Car Wheel Company's Work at Scranton has been begun.

The Buffalo Drop Forge Company have applied for a certificate of incorporation; to manufacture and sell drop forgings, tools and machinery; capital $40,000; directors: Samuel C. Rogers, Geo. D. Barr, Robt. T. Walker and others.

It has been announced in a cable dispatch that Isaac Untermeyer, of London, has purchased the Ludlow Valve Mfg. Company of Troy, N. Y., for $800,000. The factory is located at 938 and 954 River street, Troy. The officers of the company are: H. G. Ludlow, president; M. D. Schoonmaker, treasurer, and J. T. Christie, secretary. The company have a capital stock of $100,000, which is so highly valued that an offer of $1100 for a share of $100 was refused by a holder. The Ludlow Valve Mfg. Company were organized in 1866 and first engaged in business in Waterford, N. Y., in a brick building on Second street. In 1872 the property where the main factory building of the company is now located was purchased from the Troy and Lansingburgh Railroad. Nearly every year additions have been made to the plant and to the grounds. The company manufacture gas, water, steam and oil valves, check and foot valves, yard, wash and fire hydrants, which have a wide sale here and abroad.

A new company has been organized at Pittsburgh, to be known as the Northwest Ammonia Power Company. The object of the company is put into active operation the Campbell ammonia power, recently invented by C. H. Campbell of that city. The idea is to use ammonia gas in the cylinders of engines instead of steam.

The annual meeting of the stockholders of the Westinghouse Air Brake Company was held at the general offices in Wilmerding, Pa., on Monday, August 31. Geo. Westinghouse, Jr., president of the company occupied the chair, and read a statement showing the operations of the company for the past year. This statement showed the gross earnings to be $5,004,178.26; expenses, $3,308,383.28, including $132,142.56 which represented the depreciation in Wilmerding property values. Mr. Westinghouse said the earnings did not reach expectations, but stated that they exceeded the earnings of the preceding year by $400,000. The following officers were elected: Geo. Westinghouse, Jr., president; Robert Pitcairn, vice-president, and directors as follows: George Westinghouse, Jr., Robert Pitcairn, H. H. Westinghouse, Jno. Caldwell, T. W. Welsh, A. M. Byers and W. W. Card.

Miscellaneous.

The new plant now being erected by the Pittsburgh Wire Company at Rankin Station, Pa., a few miles from Pittsburgh is rapidly approaching completion, and in all probability will be ready for operations some time during October. Interested in this new concern is Lieut. W. H. Fitch, who for some time was connected with the Braddock Wire Company, whose plant is also located at Rankin Station, Pa. The new concern propose to make a specialty of rolling copper wire for telegraph purposes and electric street car service. This is an entire new industry for Pittsburgh.

The plant of the Wilwaukee Bridge and Iron Works at Milwaukee, Wis., was sold at assignee's sale on Saturday, September 5, to Julius G. Wagner, for $30,000. Mr. Wagner has been engaged in the manufacture of architectural iron work in that city for a number of years, and will take possession of the plant as soon as the inventory of property has been verified, and will continue the manufacture of bridges.

The grain-cleaning machinery built by S. Howes of Silver Creek, N. Y., is very fully described in a catalogue just issued. The illustrations show the Eureka works as they were when established in 1859 and the present extensive shops. Several engravings of the various departments are also presented. This matter is followed by illustrated descriptions of several kinds of separators, scourers, packers, automatic magnetic separators, &c. The catalogue is handsomely and durably bound in soft leather, formed with a pocket.

The success of the Reagen Feed Water, Heating Water, Circulating and Shaking Grates for boilers made by James Reagen & Co. of Philadelphia has proved as satisfactory abroad as at home, frequent orders being received from France, and causing a visit from travelers from Spain to investigate more thoroughly its merits. A locomotive with the Reagen grate has made a trip of 5000 miles without a new fire or stopping to clean.

The Muncie Architectural Iron Works, a comparatively new acquisition to the industrial establishments of Muncie, Ind., are operating one of the most complete plants of its kind ever put up, and which from its inception has been running to its full capacity. Among the more recent contracts for architectural iron work secured by the company are for the iron and steel work in the new court house at Paris, Ill., amounting to $13,000; the contract for erecting a fire-proof school building at Muskegon, Mich., the iron and steel work therein amounting to $10,000; all the iron and steel work for the new jail at Van Wert, Ohio, amounting to $8000, the latter being secured in the face of severe competition with Cleveland, Canton, St. Louis and Detroit firms.

TRADE REPORT.

Chicago.

(By Telegraph.)

Office of *The Iron Age*, 59 Dearborn street, CHICAGO, September 9, 1891.

The past week was not quite up to the recent average in the volume of business, but this has by no means checked the growth of confidence in the future. Advances in freight rates, which went into effect on the 1st inst., had considerable influence both in hastening purchases before that date and reducing the transactions since then. The lull is regarded as only temporary, because inquiries are again becoming more frequent and must result in an early restoration of activity. Railroad business is increasing, and while it may not assume large proportions this year, there is every indication of a huge volume of trade from that source next year.

Pig Iron.—Sellers of local Coke Iron report a quiet week, with no change in prices. The new Iroquois Furnace is to be blown in this week or next. It will go into operation with considerable business assured. Southern Coke Iron has been in better demand recently than local Iron. Quite a good business has been done since our last report in lots running from carloads to 1000 tons. Furnace companies are now taking more chances on the future, and show less disposition to contract far ahead. A notable transaction in this section was the sale of 1000 tons of Southern Charcoal Iron for foundry purposes. Lake Superior Charcoal is not active, but there is something doing in this line from day to day, and occasionally a round lot is disposed of at current rates. Special brands are selling at the equivalent of $18.50 @ $19.25, Chicago; but the market in general remains at $17.50 @ $18. The fact that some brands command higher prices is, however, a good indication of the growing improvement in the foundry trade. An item of interest to Chicago Pig Iron houses is the report, from a reliable source, that the manipulation of freight rates on Southern Iron which has been going on for some two years, has at last been stopped by decisive action on the part of Southern freight agents in putting all shippers on the same basis.

There is no change in quotations, which are as follows, f.o.b. Chicago:

Lake Superior Charcoal	$17.25 @ $18.00
Local Coke Foundry, No. 1	16.00 @ 16.50
Local Coke Foundry, No. 2	15.00 @ 15.25
Local Coke Foundry, No. 3	14.50 @ 15.00
Local Scotch	16.00 @ 16.50
Ohio Strong Softeners	17.75 @ 18.25
Southern Coke, No. 1	15.75 @ 16.25
Southern Coke, No. 2	15.00 @ 15.25
Southern Coke, No. 3	14.50 @ 15.00
Southern, No. 1, Soft	15.00 @ 15.75
Southern, No. 2, Soft	14.50 @ 14.75
Southern Gray Forge	14.00 @ ....
Southern Mottled	13.50 @ 14.00
Tennessee Charcoal, No 1	18.00 @ ....
Alabama Car Wheel	20.50 @ 21.50
Coke Bessemer	@ ....
Hocking Valley, No. 1	17.00 @ 18.50
Jackson County Silvery	17.50 @ 18.00

Spiegeleisen and Ferromanganese.—Quotations are unchanged. Local Ferromanganese is now out of the market and will be for some time.

Bar Iron.—Prices are higher, and so far as can be ascertained 1.75¢, half extras, Chicago, is now the market rate on ordinary specifications, but some manufacturers name 1.80¢. Quite a spurt of inquiries for Car Iron has developed, but they are mainly attributable to an order for 1000 to 2000 cars, on which bids are asked from numerous car builders. The cars are to be delivered the latter part of the winter. The time of delivery shows the attitude of the railroads with regard to purchasing material. They are not buying for immediate use. Car specifications are quoted at 1.80¢ @ 1.82½¢, flat. The output of Bar Iron here is restricted at present by the stoppage of the National Mill, whose affairs have not yet been even sufficiently adjusted to permit the assignee to run so as to work up the stock on hand. The Straight Fiber Mill has, however, been leased to parties from Wilmington, Del., who are getting it into readiness to resume operations after a long rest.

Structural Iron.—Building shapes are in strong demand, with a continued addition to the list of projected structures of large size, which will consume a large quantity of such material. Bridge work is notably more active. A local bridge company secured a good sized order the past week. It immediately covered for the Angles, Bars and Plates required. Mill lots are quoted at 2.15¢ for Angles, 2.60¢ @ 2.70¢ for Tees, 2.20¢ @ 2.25¢ for Sheared Steel Plates, and 3.20¢ for Beams and Channels, Chicago delivery.

Plates.—The American Steam Barge Company of West Superior are in the market for 1600 to 3200 tons of Steel Ship Plates, for which they will close in a day or two. They are to be delivered by November 1. Mill orders of smaller size have been fairly numerous. Tank Steel is now firmer, 2.17½¢ @ 2.25¢, Chicago, from mill. Local dealers report trade in small lots up to the average of the season, but considerably below that of last year. Store prices are unchanged, but very firm.

Sheet Iron.—Large consumers and jobbers are by no means supplied with all the Light Black Sheets they need, and inquiries are constantly going to the mills for prices on prompt shipments. The few manufacturers left in a position to quote ask 2.95¢ @ 3¢, Chicago, from mill, for No. 27 Common. Carload sales of No. 30 have been made to trunk makers. Jobbers have marked their prices for No. 27 back again to 3.20¢, and say they propose to maintain that rate. Galvanized is in very active demand, and larger orders have been taken for mill shipments than for a long time previous. Prices are strong and would be advanced, but manufacturers assert that new galvanizing works just entered the market are quoting low rates. Jobbers ask 67½ % off for Juniata.

Merchant Steel.—Carload orders for Spring, Machinery and Tire Steel are being received to some extent, but large buyers are now, as a rule, fully supplied, and a quiet time is expected for a few weeks at least. Specifications on contracts are going forward very rapidly, however, so that the Steel works are well employed. Carload lots from mill are quoted, f.o.b. Chicago, at 2.20¢ @ 2.25¢ for Open-Hearth Spring, 2.25¢ for Machinery, 2.25¢ @ 2.30¢ for Tire and 2¢ for Bessemer Bars. The Tool-Steel trade is excellent and seems to be increasing. It is now quoted in ordinary lots at 6½¢ and upward, according to quantity and quality.

Track Supplies.—An unusually large business has been done this summer in Light Rails and Street Rails and the demand still continues. Light Rails for logging purposes are particularly active. Rails of this class sell at $32.50 @ $35, according to weight of section. Standard Rails are selling in small quantities from day to day, keeping the mills supplied with work, but not crowding them. The outlook for next year is extremely encouraging. All crops are now safe but the corn crop, and that is exposed to danger from frost. Mild weather for two weeks or so will settle the question as to corn. Even a frost causing damage to corn would not be regarded as much more than a temporary setback to business. The biggest cotton crop on record will give the Southwestern roads more traffic than they can handle, and the enormous wheat crop will crowd the Northwestern roads to their utmost capacity, while a moderate corn crop will bring prosperity to the intermediate roads. They will all need Rails and will be able to buy and pay for them. Such lots as are now selling bring $31.50 @ $33, according to circumstances. Splice Bars are unchanged at 1.85¢; Spikes, 2.20¢ @ 2.25¢, and Track Bolts, 2.80¢ @ 2.90¢.

Old Rails and Wheels.—Transactions in Old Iron Rails have been light, but quotations are maintained at $23. Long Lengths of Old Steel Rails have been sold to a dealer at $15. Short pieces are $14 @ $14.50, but the demand is slow. Car Wheels are comparatively active, and sales have been made at $16.25.

Scrap.—A great deal of business could be done if dealers would take lower prices. Consumers evidently need stock, or know that they will soon need it, but they hesitate to pay what dealers ask, which is as follows, per net ton: No. 1 Railroad Forge, $19.25; No. 1 Forge, $18.50; No. 1 Mill, $14; Fish Plates, $23.25; Car Axles, $23.50; Light Iron, $9; Machinery Cast, $12; Stove Plate, $10; Cast Borings, $7.50; Wrought Turnings, $9.50; Axle Turnings, $12.50; Mixed Steel, $11; Coil Steel, $15; Leaf Steel, $16; Tires, $15.50.

Metals.—Copper is unchanged, carload lots of Lake being still quoted at 12¾¢ and casting brands at 12¢ @ 12½¢. Spelter stands at 4.85¢ @ 4.95¢. Pig Lead has been active and prices are higher. Sales foot up 700 to 800 tons at 4.30¢ @ 4.35¢.

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, PITTSBURGH, September 8, 1891.

Pig Iron.—While business continues quiet, an increased demand is confidently looked for within the next week or two; even now there is more inquiry, which will, no doubt, lead to increased business before long. Consumption is increasing, as nearly all the puddling furnaces in this district are now being worked up to their full capacity. A great many of them have been changed from gas to coal, hence there will be no stoppage, as has frequently been the case for want of fuel. The Philadelphia Natural Gas Company have given notice to all mills, factories, &c., that the supply of gas will be stopped October 1. With an increased consumption and an increase in production a stronger and more active market is confidently looked for before the close of the present month. The market may be reported stiff at prices quoted, which afford a very small margin for profit.

Neutral Gray Forge	$13.75 @ $14.00,	cash.
White and Mottled	13.00 @ 13.50,	"
All-Ore Mill Iron	14.50 @ 15.00,	"
No. 1 Foundry	16.25 @ 16.50,	"
No. 2 Foundry	15.25 @ 15.50,	"
No. 3 Foundry	14.75 @ 15.00,	"
No. 1 All Ore Foundry	17. 0 @ 17.25,	"
No. 2 Charcoal Foundry	20.50 @ 21.00,	"
Cold-Blast Charcoal	25.00 @ 27.00,	"
Bessemer Iron	15.50 @ 15.75,	"

It is doubtful whether contracts for future delivery could be made for either Mill or Bessemer Iron at inside quotations.

Muck Bar.—Most of the business appears to be at prices ranging from $26.25 to $26.50, which may be regarded as the leading prices. There is a possibility that the demand will increase as the season becomes more advanced.

Manufactured Iron.—The activity noted in our last report continues; demand instead of falling off is still on the increase, and the mills not only here but in the Shenango and Mahoning valleys are all busy, many of them working up to their full capacity. Brokers report that it is now almost impossible to place orders for present shipment, and mills gen-

erally are reported booked up for from three to six weeks. While we make no change in our quotations, prices are decidedly firmer, and contracts for future delivery cannot now be made at present prices. There is an unusually active demand for Merchant Iron. Mills making a specialty of Bridge and Structural Iron are very much crowded, and have great difficulty in meeting the demands made upon them. The railroads are also free buyers, and there is every indication that the present activity will continue for some time to come. Meantime we quote Bars at 1.70¢ @ 1.75¢; Tank and Plate at 2.05¢ @ 2.10¢; No. 24 Sheet, 2.75¢, all 60 days, 2 % off for cash. Skelp Iron, 1.65¢ for Grooved and 1.90¢ for Sheared, four months, 2 % off for cash.

Nails.—There is more inquiry reported for Cut Nails, and with only two factories in the Wheeling district in operation, the market is reported firmer, although prices remain unchanged, 30 to 35 average being quoted at $1.55 @ $1.60, f.o.b. at factories, 60 days, 2 % off for cash. There is an increasing demand reported for Wire Nails also, and while some desirable orders have been placed for near-by delivery at $1.85, there are no sellers for late deliveries under $1.90, 60 days, 2 % off for cash. There has been considerable inquiry reported from Chicago, Minneapolis and other points in the Northwest within the past week.

Structural Material.—Manufacturers are very busy; indeed they are crowded to such an extent that they scarcely know which way to turn. Prices firmer, but unchanged. Channels and Beams, 3.10¢; Sheared Bridge Plates (Steel), 2.15¢ @ 2.20¢; Angles, 2¢; Tees, 2.60¢; Universal Mill Plates, Iron, 2.05¢; Refined Bars, 1.80¢ @ 1.85¢.

Steel Plates—The inactivity noted for some time past continues, but it is hoped that there will soon be a change for the better. Shipbuilders on the lakes appear to have been doing little thus far this year, and boiler makers report business as being dull. Prices remain unchanged, but it is probable that for desirable orders our quotations would be shaded: Fire Box, 3.90¢ @ 4.25¢; Tank, 2.10¢; Shell, 2.35¢; Flange, 2.55¢.

Merchant Steel.—There is an increased demand reported, but prices remain unchanged as follows: Crucible Tool Steel, 6½¢ @ 7¢; do. Spring, 4¢; do. Machinery, 4½¢ @ 5¢; Bessemer Spring Steel, 2½¢; do. Machinery, 2.40¢ @ 2.50¢; do. Toe Calk, 2.50¢; Tire Steel, 2.20¢; Steel Bars, 1.80¢ @ 1.85¢, full extras.

Wire Rods.—Careful investigation discloses the fact that there has been no actual business for several weeks, in the absence of which it is difficult to give reliable quotations. The fact of the matter is manufacturers are well sold up and consumers are pretty well covered for the present, and this accounts for the absence of new business of late. We continue to quote nominally at $34 @ $35, f.o.b. at maker's mill. One of our largest manufacturers reports that under no circumstances would his firm sell under $35. Of the three firms here making Rods none of them are sellers at present, nor have they been for some time past.

Wrought Iron Pipe.—There is not the business usual at this season of the year, and prices are being cut to some extent, especially on large Pipe, for which the demand appears to be small. We repeat former discounts as follows: On Butt Black, 52½ %; on do. Galvanized, 42½ %; on Lap Black, 62½ %; on Lap Galvanized, 50 %. Boiler Tubes, up to 2¼-inch, inclusive, 55 %; 3 to 6 inch, inclusive, 10 %; 7-inch and larger, 55 %; Casing, all sizes, 55 %.

Old Rails.—There is considerable inquiry for Iron Rails, with but few offering; may be quoted at $23.50 @ $24. The stock is growing less and less, the effect of which is to stiffen the market, and with any great improvement in the demand, prices would undoubtedly advance. Old Steel Rails, in the absence of sales, quotable at $17 @ $17.50.

Billets and Slabs.—There has been considerable business the past week, mostly at $25, f.o.b. at makers' mill, which is a very low price, and the feeling generally obtains that the lowest has been reached. Rumors obtain of sales having been made at $24.75, but in well-informed circles are not credited.

Barb Wire.—There is no change in prices. Painted in car lots, $2.75, and $2.80 for less than carload lots. Galvanized, $3.25 in car lots, and $3.30 for less, f.o.b. at makers' mill. Business is reported as being quiet, but there is usually a lull at this season of the year.

Railway Track Supplies.—The activity noted for some time past continues, and it is said to be difficult to place an order for immediate or even near-by delivery. Prices firm, but unchanged. Spikes 2.10¢, 30 days, f.o.b at makers' works; Splice Bars 1.75¢ @ 1.80¢; Track Bolts 2.75¢ with Square and Hexagon Nuts.

Steel Rails.—There is a fair business, and the local market is firm at $30, f.o.b. at makers' mill, with the mill at Braddock pretty well sold ahead.

Ferromanganese.—There has been an increased demand during the past week or two, and while the market is firmer prices remain unchanged. Sales of 80 % Domestic at $66.50, cash. Foreign cannot be laid down here at the price quoted, hence there is none of it being sold in this market.

Old Material.—There is an increasing business, but prices remain about as last quoted. Sales of some 700 tons No. 1 R. R. Wrought Iron at $19.50, net ton; Cast Scrap, $13.50, gross. Steel Rail and Bloom Ends at $17 @ $17.50.

Coke—Continues in good demand. No change in prices: Furnace Coke, $1.90; Foundry, $2.30; Crushed, $2.65, all per net ton, f.o.b. cars at ovens.

The partnership heretofore existing between J. B. Booth and Jas. Todd under the firm name of J. B. Booth & Co., Iron and Steel Brokers, Bank of Commerce Building, Pittsburgh, Pa., has been dissolved by the retirement of Jas. Todd. The business will be continued at the old location by J. B. Booth under the firm name of J. B. Booth & Co.

Louisville.

LOUISVILLE, KY., September 7, 1891.

Pig Iron.—There is more inquiry for Iron. It is felt that bottom has been reached, and that steady trade can be depended upon for the balance of the year. Consumers, however, are not speculating, but are purchasing only as orders are received. The buying on the part of railroad companies, however, has commenced, and orders are being given by them in amounts nearly double that of preceding months. The result has been that rolling mills have advanced the prices of Iron, though there has been no movement in raw material. The situation in this respect is peculiar, as it has almost always happened that raw materials advanced from 30 to 40 days before there was any movement in the finished product, which order is now being reversed. Producers of finished material do not anticipate any special advance, but do look forward for steady business, enabling them to run full. Four months ago the production of Pig Metal was about 59,000 tons per week, and now it is on basis of about 124,000 tons. At the same time, stocks for the preceding month had increased but a little over 23,000 tons, showing that consumption had also increased remarkably, and this, notwithstanding the buying on the part of railroads was small. In view of the tremendous harvest and the demands upon railroads for cars, it is felt that the consumption of Iron will be heavier than the production, and that present stocks will have to be drawn upon. It is not anticipated, however, that values will be very much affected at present. Car-Wheel Irons are very dull, and prices are being made as low as at any period. Lake Superior Irons are also offered in this market on basis of $18.50, Louisville, which is probably the lowest price ever made for Lake Superior in this territory. We quote for cash, f.o.b. cars Louisville:

Southern Coke, No. 1 Foundry	$14.50 @ $15.00
Southern Coke, No. 2 Foundry	13.75 @ 14.25
Southern Coke, No. 3 Foundry	13.25 @ 13.75
Southern Coke, Gray Forge	12.75 @ 13.25
Southern Charcoal, No. 1 Foundry	16.00 @ 17.00
Southern Car Wheel, St'nd br'nds	18.50 @ 20.00

Cleveland.

CLEVELAND, September 7, 1891.

Iron Ore.—Lake freights are fluctuating about in a very uncertain way, and as a result very little Ore is being sold. The rate from Escanaba advanced to $1 and the Ashland rate to $1.25 last week, but only a few charters were made at these figures. New Ore is coming down from the mines in enormous quantities, the receipts at lower lake ports during the past week being 40,000 tons heavier than for the corresponding week in 1890. The shipments to the furnaces were proportionately greater than last year. Furnacemen in the East are again asking for non-Bessemers, but only scattering and unimportant sales are reported at the advances made necessary by the increased cost of bringing down new Ore. Conservative Ore men estimate the amount of new Ore already sold at 6,500,000 tons. A few heavy buyers are known to be watching the market closely in the hope of finding an opportunity to complete their purchases for the year without paying the advance, which is in complete discord with the condition of the Pig-Iron market. It is not thought, therefore, that there will be any considerable amount of buying until transportation rates are more firmly established. Some scattering sales of Gogebic Bessemers have been sold at $4.75, f.o.b. cars lower lake ports, but no important sales are looked for before the latter part of the month.

Pig Iron.—Dealers seem to have the utmost confidence in the steady improvement of the market despite the present dullness. The general situation is much more satisfactory than for many weeks past, and every indication points toward better prices within the next 30 days. The interruption of a legal holiday is having some effect upon the market, but in reality very little buying has been done during the past week. Following are strictly local quotations:

Nos. 1 to 6 Lake Superior Charcoal	$18.50 @ $19.00
Nos. 1, 2 and 3 Bessemer, per ton.	16.00 @ 16.25
No. 1 Strong Foundry, per ton..	16.25 @ 16.75
No. 2 Strong Foundry, per ton..	15.25 @ 15.75
No. 1 American Scotch, per ton.	16.80 @ 17.00
No. 2 American Scotch, per ton.	15.80 @ 16.85
No. 1 Soft Silvery, per ton	16.50 @ 17.50
Mahoning and Shenango Valley Neutral Mill Irons, per ton	14.00 @ 14.50
Mahoning and Shenango Valley Red Short Mills, per ton	14.00 @ 14.50

Manufactured Iron.—The heavy demand for Common Bar continues and the mills are all well employed. Present indications are that there will be plenty of business until the close of the year. Prices are unchanged.

Nails.—Business is rather slow in the Nail market, and prices are not very firm at $2.05 for Steel Wire and $1.70 for Steel Cut Nails in stock.

Old Rails.—The market is quiet. Old Americans are quoted at $22.50 @ $23, but only scattering and unimportant sales are reported. Valley furnacemen are making something of a demand for them.

Scrap.—Very little is being done in the way of sales, and prices are none too firm on the basis of $19 @ $19.25 for No 1 Railroad Wrought.

Structural Iron.—There is a good demand and the market is very firm.

Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fourth and Main Sts., CINCINNATI, September 9, 1891.

Pig Iron.—There is evidently a more confident feeling in the Iron market, and while there are liberal offerings of the leading varieties, like Gray Forge, Mottled and No. 3 Foundry, there is a disposition to limit deliveries to this year, an advance being asked for longer deliveries; in fact, there is not much Gray Forge offered even for prompt delivery and for spot cash under $9.75, although this price would still be accepted for the balance of this year. The sales of these grades for the week have been larger, amounting in the aggregate to about 10,000 tons. Southern pipe works have been in the market for a few thousand tons, but it is not any essential increase in the present demand so much as the recuperation in general business that is giving increased confidence to sellers, for although the anticipated increase in the demand may be and probably will be gradual, they say that it is sure to come. There have been sales of Ohio Softeners at better prices than have recently prevailed, an extra price being paid for prompt delivery because of their scarcity. In Charcoal Iron there is no movement, and there is apparently no demand in sight, for there is no demonstration on the part of Car works looking toward any large consumption of Iron. There is less complaint of slow collections—in fact, the money market here has worked into an easier condition than has prevailed for a long time. Quotations unchanged, as follows:

Foundry.

Southern Coke, No. 1	$14.75 @ $15.00
Southern Coke, No. 2	13.50 @ 13.75
Southern Coke, No. 3	13.00 @ 13.25
Ohio Soft Stone Coal, No. 1	16.50 @ 17.00
Ohio Soft Stone Coal, No. 2	15.50 @ 16.50
Mahoning and Shenango Valley	17.00 @ 17.50
Hanging Rock Charcoal, No. 1	20.00 @ 21.00
Hanging Rock Charcoal, No. 2	19.00 @ 20.00
Tennessee and Alabama Charcoal, No. 1	16.00 @ 17.00
Tennessee and Alabama Charcoal, No. 2	15.00 @ 16.00

Forge.

Gray Forge	12.50 @ 12.75
Mottled Neutral Coke	12.00 @ 12.25

Car Wheel and Malleable Irons.

Standard Southern Car Wheel	19.25 @ 19.75
Hanging Rock, Cold Blast	25.00 @ 26.00
Lake Superior Car Wheel and Malleable	18.00 @ 18.50

Detroit.

WILLIAM F. JARVIS & Co., Detroit, Mich., under date September 7, say: The steady increase in the inquiries received for the past few weeks gives promise of better business in the near future. This, together with the fact that three or four sales of considerable magnitude have been reported and others are now pending is evidence that the inquiries were from purchasers who were covering for contracts taken. While the demand is greater for Lake Superior Charcoal than any other class, yet there are some sales of Southern and Ohio Irons reported. Consumers are asking that shipments on old orders be hurried forward, as they find they are using faster than they anticipated, and are running short. This condition seems to exist particularly with a large number of the small jobbing foundries. The firmness of the market is shown very conclusively by the buyer paying the recent advance in rates from the South and on lake rates. We report an increasing demand and prices ruling steady, and quote as follows:

Lake Superior Charcoal, all numbers	$18.00 @ $18.50
Lake Superior Coke, Bessemer	17.75 @ 18.50
Ohio Blackband (40 per cent.)	18.00 @ 18.50
Lake Superior Coke Foundry, all ore	17.50 @ 18.00
Southern No. 1	16.25 @ 16.50
Southern Gray Forge	14.00 @ 14.50
Jackson County (Ohio) Silvery	18.00 @ 18.50

St. Louis.

OFFICE OF *The Iron Age*, 214 N. Sixth st., ST. LOUIS, September 7, 1891.

Pig Iron.—Nothing of importance has transpired during the last week. Sales have been confined mostly to small lots, which were entered for prompt delivery. Prices do not improve, but with the increased trade that is expected between now and the end of the year, a corresponding improvement in prices will likely follow. While there are no special features to note, the feeling is gaining ground that bottom has been reached, and that from now on a steady adherence to present values can be expected. Furnaces are not so urgent regarding sales as they were some two or three weeks since, and prices are not near so easily shaded. General business is improving, and a visit to different manufacturing establishments in this locality shows that an excellent trade is enjoyed in all directions. Car-wheel foundries, stove works, architectural foundries, &c., are all busy, and say the outlook for a large fall and winter trade was never better. With these points in view the immediate future of the Iron trade seems bright, and once the demand sets in it is likely to keep improving. Of course until there is some decided improvement in the demand prices will remain stationary, but even this would be preferable to the condition the market has been in for some three months past, where price seemed a secondary object, the main endeavor being to sell the Iron and generally at a price named by the purchaser. To sum up the whole matter, the market is in better condition to-day than it has been for months. Furnaces have no accumulation of Iron on the banks, and, on the other hand, consumers have bought merely to cover present requirements. Under the existing circumstances it seems the market is in fair shape to respond to any movement tending toward the betterment of prices. We quote as follows for cash, f.o.b. St. Louis:

Southern Coke, No. 1 Foundry,	$15.50 @ $15.75
Southern Coke, No. 2 Foundry,	14.50 @ 14.75
Southern Coke, No. 3 Foundry,	13.75 @ 14.00
Gray Forge	13.00 @ 13.25
Southern Charcoal, No. 1 Foundry	17.00 @ 17.50
Southern Charcoal, No. 2 Foundry	16.50 @ 16.75
Missouri Charcoal, No. 1 Foundry	15.50 @ 16.00
Missouri Charcoal, No. 2 Foundry	15.00 @ 15.50
Ohio Softeners	17.75 @ 18.75

Bar Iron.—The improvement noted last week continues. Car manufacturers have been large buyers, and mills have not been so urgent to sell as heretofore; in fact, some mills have advanced their prices to a point which preclude the possibility of making sales. This is done so as to give them an opportunity of taking advantage of higher prices, which they confidently expect within the next 30 days. In this they may be disappointed, but from to-day's standpoint the chances are decidedly in their favor, and orders placed to-day will probably prove good investments. Prices are firmly adhered to as follows: Lots from mill command 1.70¢ @ 1.75¢. Lots from store are quoted at 1.82½¢ @ 1.87½¢, according to quantity.

Barb Wire.—Under the direction of the Columbia Patent Company, this department is becoming more settled from day to day. Prices are no longer shaded by rival manufacturers, and dealers are more than satisfied with the manner in which this department is conducted. A steady trade is reported at the following prices: Carload lots of Painted, 2.85¢; Galvanized, 3.35¢; less than car lots, 5¢ ₱ cwt. additional. Terms 30 days or 2 % discount for cash within ten days from date of invoice.

Wire Nails.—The demand for Nails is somewhat better, but prices continue droopy. Carload orders are quoted at $2.10; small lots from store, $2.20.

Pig Lead.—There is very little doing; offerings are moderate and consumers do not appear anxious regarding the future and are buying merely to cover present requirements. The week's sales will not aggregate more than 400 tons. Offerings are made for September delivery at 4.30¢. The same old story has to be repeated regarding the Spelter market—nothing doing and price purely nominal at 4.65¢.

Philadelphia.

Office of *The Iron Age*, 230 South Fourth St., PHILADELPHIA, Pa., September 8, 1891.

The week opens with a somewhat active demand in certain lines, but there is practically no change of feature in any department. Business can be had in liberal quantities at low prices, and as a matter of fact, that's the kind of business that's being done. Buyers so far have successfully resisted any attempt to advance the market, and about the most that can be said is that cuts are neither as deep, nor as frequent as they were some time ago. Nevertheless there is a good undertone, and the chances for better prices seems to be favorable; all that is needed is a start. At present, however, there are plenty of sellers, and everything or anything on the list can be had at prices recently ruling.

Pig Iron.—There is a heavier demand probably, but consumers are not taking very large lots, neither is there any pressure to realize except for spot cash and immediate delivery, and even this is only in the case of new brands or for inferior qualities. Standard brands are well sold up, and are therefore held at full quoted rates. Supply and demand appear to be very evenly balanced, but as stocks in both first and second hands are quite small, it would not require much increase in consumption to develop something of a scarcity. The margin to "come and go on" is rather narrow, but with such an immense capacity waiting to be utilized, there is not much danger of a scare, although even that is not beyond the limits of possibility. Meanwhile, sales are being made at about the following prices, varying according to brand, point of delivery, &c., the inside figure being mostly within limits such as Baltimore, Harrisburg, Reading, &c.

Ohio Softeners, No. 1x	$19.00 @ .....
Ohio Softeners, No. 2x	18.00 @ .....
Standard Penna, No. 1x	17.75 @ $18.00
Standard Penna, No. 2x	16.25 @ 16.75
Medium Penna, No. 1x	17.25 @ 17.50
Medium Penna, No. 2x	16.00 @ 16.25
Virginia, No. 1x	16.50 @ 17.25
Virginia, No. 2x	15.50 @ 16.00
Standard Neutral All-Ore Forge	14.25 @ 14.75
Ordinary Forge Cinder mixed	13 75 @ 14.00
Hot-Blast Charcoal	20.00 @ 22.00
Cold-Blast Charcoal	24.00 @ 27.00

Muck Bars.—Market extremely dull, and to induce sales $26.75, delivered, would have to be shaded. Some holders refuse to meet the market, but the only

sales reported during the week were at $26 50, and even at that figure there is not much of a demand.

Steel Billets.—There is no improvement in prices, but a large business has been done, including Nail Slabs at something less than $27, delivered, on the Susquehanna, and at equivalent prices further East—say $27.40 on the Schuylkill.

Steel Rails.—A little more inquiry and a somewhat larger business, but nothing of special importance can be reported at present. Prices, as before, $30, f.o.b. cars at mills.

Bar Iron.—Market a trifle more active and prices steady. There is a good general demand, but the absence of orders from large consumers, such as car builders and others of that class, prevents anything like a decided improvement in prices Prospects are fairly encouraging, however, and as the roads need cars, it is presumed that orders cannot be delayed very much longer. Meanwhile quotations range from 1.70¢ to 1.75¢ for city deliveries, or 1.65¢ to 1.70¢ at interior points. Some makers, however, are asking $\frac{1}{10}$¢ more, and are said to be getting it on the general run of orders.

Skelp Iron.—There is a better demand for Skelp Iron, and sales to the extent of several thousand tons are reported at about 1.72½¢, delivered.

Plates.—Mills are quite full of business, and manufacturers are beginning to talk better prices, although there are no evidences as yet that business has been refused at the old figures. Still, as several leading concerns have about all the work they can handle for some weeks to come, and the general demand shows no falling off, it is not unlikely that better prices will rule in the future. Any further increase in the demand would certainly lead to an immediate stiffening. Ordinarily asking prices are about as folows, delivered:

	Iron.	Steel.
Tank Plates	1.90 @ 2.00¢	2.00 @ 2.10¢
Refined	2.20 @ 2.30¢	2.10 @ 2.20¢
Shell	2.30 @ 2.40¢	2.40 @ 2.50¢
Flange	3.20 @ 3.30¢	2.50 @ 2.75¢
Fire-Box	4.00 @ 4.25¢	3.00 @ 3.50¢

Sheet Iron.—Demand improving and mills running to full capacity in meeting current requirements. Prices unchanged, and for the best makes held as follows:

Best Refined, Nos. 14 to 20.....3.00¢ @ 3.10¢
Best Refined, Nos. 21 to 24.....3.10¢ @ .....
Best Refined, Nos. 25 to 26.....3.20¢ @ 3.30¢
Best Refined, No. 27.....3.40¢ @ .....
Best Refined, No. 28.....3.50¢ @ .....
Common, ¼¢ less than the above.
Best Soft Steel, Nos. 14 to 20 .....3¢ @ 3¼¢
Best Soft Steel, Nos. 21 to 24.....3¼¢ @ ....
Best Soft Steel, Nos. 25 to 26.....4¢ @ ....
Best Soft Steel, Nos. 27 to 28.....4¢ @ ....
Best Bloom Sheets, ¼¢ extra over the above prices.
Best Bloom, Galvanized, discount.... @ 67½ %
Common, discount... ..... @ 70 %

Old Material.—Market irregular, and on any attempt to force sales lower prices would be met by reduced bids. Nominally prices are as follows: Old Iron Rails, $21.50 @ $22.50; Steel Rails, $17.50 @ $18.50; No. 1 Railroad Scrap, $20.50 @ $21.50, Philadelphia, or for deliveries at mills in the interior $21 @ $21.50, according to distance and quality; $14.50 @ $15 for No. 2 Light; $13.50 @ $14 for best Machinery Scrap; $13 for ordinary; $14 @ $15 for Wrought Turnings; $9.50 @ $10 for Cast Borings, and nominally $24 @ $25 for Old Fish Plates, and $16 @ $17, delivered, for Old Car Wheels.

The Campbell & Zell Company of Baltimore are now building or erecting the following Zell boiler plants: Chino, Cal., 1250 H. P.; Portland, Ore., 120 H. P.; Chicago, Ill., 300 H. P.; Milwaukee, Wis., 900 H. P.; New York City, 300 H. P.; Ambler, Pa., 375 H. P.; Hampton, Va., 125 H. P.; Washington, D. C., 600 H. P.; Baltimore, Md., 300 H. P.

New York.

Office of *The Iron Age*, 96-102 Reade street, NEW YORK, September 9, 1891.

American Pig.—The demand for standard brands of Foundry Irons continues steady enough to absorb current production, so that there is little or no pressure to sell. Off Irons can only be placed at a sacrifice, however, and Forge grades continue weak, Southern Iron selling on the basis of $9.50, Birmingham. Northern brands are quoted at $16.75 @ $18 for No. 1; $16 @ $16.50 for No. 2, and $14 @ $14.50 for Gray Forge. Southern Irons sell at $16 @ $17 for No. 1; $15.25 @ $16 for No. 2; $15.50 @ $16 for No. 1 Soft, and $14 @ $14.50 for Gray Forge. The low prices at which Bessemer Pig is selling in Pittsburgh are the subject of much comment.

Ferromanganese.—Importers and agents of foreign producers are agitated over a sale of foreign Ferromanganese just made in this market. A lot of 500 tons, part October shipment, balance prior to close of navigation, has been sold to an Eastern Steel company. It is charged that the combination price of $64.50 was cut by at least $1 ℔ ton. If this accusation is found to be correct there is little doubt that the combination will not last long. The agents of a number of foreign makers have been very restive under the restrictions which the agreement imposed, and have questioned freely the wisdom of a policy which practically turned over to the leading American producer the whole of the country west of the Allegheny Mountains, where by far the largest part of the Mild Steel produced in this country is made. Spiegeleisen remains very dull at nominally $27.50 @ $28.

Billets and Rods.—The market is dull. There have been only small sales of Billets, the business being captured by Western mills at low prices. We quote foreign Billets $31.25 @ $31.50, and domestic Wire Rods, tidewater delivery, $37.50 @ $38.

Swedish Rods and Bars.—During the past few weeks the market has stiffened very materially. Rivet Rods, which sold as low as $53 @ $54 two months ago, are now held at $57 @ $58, and Swedish Bars, jobbers' specifications, are $68 @ $69.

Railroad Fastenings.—A few fair orders have been given out for Angle Bars, and there is some business pending. We quote Angle Bars 1.70¢ @ 1.75¢; Spikes, 2.05¢ @ 2.15¢, and Bolts and Nuts, 2.70¢ @ 2.80¢.

Manufactured Iron and Steel.—The volume of business is good, but prices have not as yet shown the slightest disposition to harden, except in Bars. Plates are weak. We continue to quote: Angles, 1.90¢ @ 2.10¢; Sheared Plates, 1.95¢ @ 2.25¢; Tees, 2.45¢ @ 2.75¢, and Beams and Channels, 3.1¢, on dock. Steel Plates are 1.95¢ @ 2.15¢ for Tank; 2.25¢ @ 2.6¢ for Shell; 2.4¢ @ 2.6¢ for Flange, and 3¢ @ 3.25¢ for Fire Box, on dock. Bars are 1.7¢ @ 1.9¢, on dock. Scrap Axles are quotable at 2.15¢ @ 2.20¢, delivered.

Steel Rails.—At the hour of going to press no reports were available concerning the proceedings of the meeting of manufacturers of Steel Rails at the office of the Illinois Steel Company in this city. The market is still very quiet. Inquiries are more numerous, but the record of actual sales is very meager indeed. We continue to quote $30.75, tidewater.

New York Metal Exchange.

The only transaction we have to note was on Friday, September 4, 25 tons tin, at 20.07½ cents.

Financial.

Making allowance for the interruptions of Labor Day, business is more active, encouraged by good crop reports, the European demand, comparatively easy money and the more satisfactory condition of labor. Not the least among current incidents is the defeat of the Amalgamated Association and consequent better prospects for the iron industry in Pennsylvania. A somewhat thorough canvass of wholesale business houses in this city during the week serves to strengthen the prospects for a good autumn trade, based on tremendous crops in the West and Northwest, where the renewed stimulus is most decidedly felt, and in the South a better feeling results from an advance of about 1¢ in the price of cotton. Western buyers are in market in more than the usual number. When the crops are sold and paid for farm machinery and all sorts of merchandise will be wanted. Already the railroads and coastwise steamship lines notice a liberal increase of traffic. An Atlanta dispatch says trading has begun briskly, and banks which lately were pressing their collections are now extending their accommodations. Eastern trade will pick up about a fortnight later. The aggregate eastbound shipments from Chicago by lake and rail are equal to 175,000 tons, against 170,000 the week before. A formidable "corner in corn" in Chicago is supposed to affect at least 6,000,000 bushels, for which transportation is being secured to New York. Provisions gained strength from the removal by Germany of the prohibition of pork, but the duty remains. Denmark follows the example of Germany. The total pork packing in the West this season represents 4,970,000 hogs, a decrease of 2,295,000 compared with a year ago. Secretary Rusk says there can scarcely be a doubt but that the market for our surplus pork products will in time be greatly improved by the action of the German Government. In 1881, the last year this country enjoyed unrestricted trade with Germany and France, so far as meat products were concerned, the total value of American pork exported to Europe was $70,000,000; in 1889 the value of these exports was but $39,000,000. In a careful review of the situation by Henry Clews & Co., last year's crops are compared with the estimated yield for the year 1891, as follows:

	1890.	1891.	Increase.
Corn	1,489,970,000	2,040,009,000	550,030,000
Wheat	399,262,000	585,000,000	185,738,000
Oats	523,621,000	700,000,000	176,379,000
Rye	27,140,000	29,000,000	1,860,000

Here we have in round numbers, taking the cereals combined, 914,000,000 bushels more than last year, giving us an exportable surplus of 225,000,000 bushels of wheat, and in addition a large quantity of corn. Turning to Europe, it is estimated that at least 250,000,000 bushels of wheat will be required to cover the shortage, and America alone has a heavy surplus. The hope is that Europe will yet comprehend that maize ranks among the most valuable articles of food, and accept the substitute.

The stock market was active and strong. At the opening there was a reaction on talk of damage to the corn crop by frost. Union Pacific was weak at the same time, owing to troubles over its floating debt. On Friday the reaction had run its course, and the upward movement was resumed. There was some irregularity on Saturday, owing to realizing induced by the fact of Monday being a holiday. On Tuesday, after severe bear attacks, the market closed strong.

A large business was transacted in railway bonds. Governments were neglected. In State bonds $4000 Tennessee 3s sold at 70¾, and $10,000 Virginia 6s, deferred stamped, at 7. United States bonds were steady at the following quotations:

U. S. 4½s, 1891, extended	99⅝
U. S. 4s, 1907, registered	116½
U. S. 4s, 1907, coupon	117½
U. S. currency 6s	110½

The bank reserve shows a decrease of $3,611,425, which brings the excess above legal requirements down to $9,156,900, the lowest point since June 6, when the figures were $6,687,600. The total loss in cash was $3,750,300 and the banks increased their loans $3,233,300. Shipments to the interior were heavy, about 70 % being to Western points. The movement South has commenced, but as yet is of moderate proportions. The amount of currency thus supplied averaged nearly $41,000,000 a day. The money market is easy. Very little was done in time loans. Prime commercial paper was quoted 5½ % @ 6½ %. Chicago banks reported more borrowing by grain houses, also additional calls by the packing and provision trade at 6 %. Gold to the amount of $3,500,000 was shipped during the week from Europe for New York, and one feature was the offering by the Fourth National Bank of loans at low rates, to encourage early imports as previously had been done on the other side, as a "special transaction." Treasury disbursements on account of the 4½ per cents and returning gold have allayed the fears of tight money. The redemption of bonds by the Treasury amounted to over $9,000,000.

Silver certificates were neglected. Bar silver in London declined to 44⅞d. per ounce.

Sterling exchange was firmer, with posted rates at $4.83 @ $4.86. The foreign commerce of the port of New York for the week was as follows: Exports of produce, $8,609,391, against $4,500,000 last year; imports of dry goods and general merchandise, $8,458,292, against $10,755,828 last year.

The general markets had a better tone. Dry goods jobbers note an improved demand from the West and Northwest. Cotton made a material advance and print cloths were affected by the same cause, much to the relief of Eastern manufacturers. Grain dropped on the lessened export demand and increasing supplies. Coffee was lower. Sugar firm. Provisions were excited, active and decidedly higher, on the announcement in the morning papers of the removal of the German prohibition, Denmark following.

Coal Market.

The Anthracite Coal market is dull and unsatisfactory. It is what the operators call a "waiting market;" that is to say, both sellers and consumers are waiting for something to turn up. The former are waiting for customers, and the latter are waiting for more favorable chances to buy. Another meeting will be held shortly to consider prices and another advance is thought probable, although such a step is generally considered unwise, there being no natural conditions as to supply and demand justifying such a measure. At present July prices only are recognized. The small steam sizes can be had in abundance at $2, f.o.b., for Lehigh Pea and $2.10 @ $2.15 for Free Burning; Buckwheat, $1.50 @ $1.60, all f.o.b. The average price of Anthracite Coal in the Schuylkill region last month was $2.24 5/16, as compared with $2.23½ in July and $2.19 4/16 in August, 1890.

Comparative statement of shipments of anthracite Coal for the week ending August 29:

	1891. Tons.	1890. Tons.
Wyoming	400,974	414,848
Lehigh	126,137	149,534
Schuylkill	225,012	278,904
Total	752,123	823,259
Year to August 29	24,746,730	21,967,625

The foregoing shows an increase of 139,000 compared with the previous week. The Reading sent 32,000 tons to Port Richmond and 23,000 to New York waters. Vessel freights from New York to Boston are quoted 50¢ @ 70¢.

The following is stated to be the tonnage of the several interests named to August 29:

	1891.	1890.
Philadelphia and Reading	4,877,036	4,115,259
Lehigh Valley	5,395,820	4,594,783
C. R. R. of N. J	3,899,229	3,659,164
D., L. & W. R. R. Co	3,520,537	3,164,974
Delaware and Hudson Canal Company	2,685,506	2,494,487
Pennsylvania Coal Company	1,106,226	882,626
N. Y., L. E. & W	577,555	505,485
Pennsylvania R.R	2,473,705	2,181,888

Bituminous Coal is in better demand. Beach Creek exports for the week 74,768 tons, Clearfield, 55,000 tons; Pocahontas, 53,500; C. & O., 54,000 tons. Mines in Indiana and Illinois are increasing their output. The difficulty in obtaining cars increases with the increased movement of grain.

The long standing complaint filed with the Interstate Commerce Commission by J. C. Haddock and Haddock, Shonk & Co. against the Delaware, Lackawanna and Western Railroad Company, alleging discrimination in the matter of anthracite freight rates, was called in New York at the suggestion of the commission, for the purpose of taking testimony. The Philadelphia *Press* learns from Mr. Haddock that it will be necessary before examination can proceed for the plaintiffs to go before a United States Court and obtain an order compelling the witnesses to answer.

Metal Market.

Pig Tin.—Speculation has been confined within very narrow bounds, and purchases for consumption have hardly reached the average volume for the season. Holders of the bulk of the heavy stock lying here give the market a certain degree of support, by appearing as buyers rather than sellers and keeping matters in such shape that late sellers of "puts" are unable to influence prices, although the statistical position would appear to be in their favor. Out-of-town orders have been filled at prices unusually close to the net cash figures for 10-ton lots, and doubtless would be at this writing. On Wednesday there were sales of 10 tons at 20.07½¢, net cash, on spot and 10 tons at 20.10¢ for November delivery. Jobbing parcels were dealt out at 20.15¢ @ 20½¢, as to size of lot and terms.

Copper.—While no unusually heavy transactions have taken place, the movement is undoubtedly somewhat freer and sufficient to give stability to the firmness in values that has been making gradual headway since the first of the month. At the present time it is doubtful that less than 12⅝¢ would buy Lake Superior Ingot and the quantity on sale at under 12½¢ appears to be moderate. Arizona has been sold for future delivery at 12¼¢, in fairly large quantity, and Casting Copper is moving to a fair extent at 11½¢ @ 11¾¢, according to brand.

Pig Lead.—Consumers have purchased about 1200 tons during the past week, chiefly at 4¼¢, for September and October delivery. That price is now bid and refused for good sized lots, while the offering at 4.52½¢ @ 4.55¢ is somewhat reserved. Single carloads, spot delivery, have been sold at the last named prices during the past few days.

Spelter.—There is not the pressure to sell that was noticeable a week ago, and the market is therefore somewhat steadier. That supplies are ample is plain, however, and for prime Western in carload lots 4.95¢ @ 5¢ is generally quoted.

Antimony.—Demand is of routine sort and prices are still rather weak. Hallett's is quoted at 10¢, LX at 10½¢, L. J. & C. at 11¢ and Cookson's at 12½¢, in wholesale quantities.

Tin Plate.—Coke finish Plates have been offered rather more freely on the spot, and prices have eased off about 5¢ ₱ box, with merely a fair business effected. Terne Plates are firmly held, being in moderate supply, and Charcoals are steady, without, however, anything more than the routine jobbing movement in either line. We quote: Coke Tins—Penlan grade, IC, 14 x 20, $5.40; J. B. grade, do., $5.50; Bessemer do., $5.45; Siemens Steel, $5.60; Stamping Plates—Bessemer Steel, Coke finish, IC basis, $5.75; Siemens Steel, IC basis, $5.85 @ $6; IX basis, $6.85 @ $7. IC Charcoals—Melyn grade, $6.50; for each additional X add $1.50; Allaway grade, $5.95; Grange grade, $6; for each additional X add $1. Charcoal Ternes—Worcester, 14 x 20, $5.75; do., 20 x 28, $11.50; M. F., 14 x 20, $7.50; do., 20 x 28, $15.50; Dean, 14 x 20, $5.25; do., 20 x 28, $10.50; D. R. D. grade, 14 x 20, $5.15; do., 20 x 28, $10; Mansel, 14 x 20, $5.25; do., 20 x 28, $10.25; Alyn, 14 x 20, $5.25; do., 20 x 28, $10.35; Dyffryn, 14 x 20, scarce; do., 20 x 28, $11. Wasters—S. T. P. grade, 14 x 20, $4.90; do., 20 x 28, $9.70; Abercarne grade, 14 x 20, $4.90; do., 20 x 28, $9.60.

A gratuitous, and, so far as we can learn, unfounded attack has been made by James Lewis & Son of Liverpool, England, Copper merchants, upon the quality of Tamarack and Osceola Lake Copper. In their last report they stated that the quality was very irregular and unreliable. Lewiston Brothers of this city, agents for the companies named, emphatically deny that this is true. They assert that the two brands named are beyond any question as good as the best brands of Lake Superior in the market. They assert, further, that the Osceola Copper for wire purposes is the best in the market, not even excepting Calumet and Hecla. They add that both Tamarack and Osceola have been sold for years in Europe, and that not a single complaint has been received.

Imports.

Hardware, Machinery, &c.

Boker, Hermann & Co., Arms, cs., 36
Borgfeldt, Geo. & Co., Hdw., cs., 6
Downing, R. F. & Co., Arms, cs., 9; Chains, cs., 20
Folsom, H. & D. Arms Co., Arms, cs., 4
Godfrey, Chas. J., Arms, cs., 14
Hartley & Graham, Arms, cs., 17
Hawley, E., Hdw., cs., 3; Mdse., cs., 12
Hensel, B. & L., Mach'y, pgs., 10
Lau, J. H. & Co., Arms, cs., 9
Meacham Arms Company, Arms, cs., 20
Montgomery & Co., Hdw., cks., 2
Richards & Baras, Mach'y, cs., 46
Schoverling, D. & G., Arms, cs., 35
Van den Toorn, W. H. Arms, cs., 33
Ward, Jas. E. & Co., Arms, cs., 8
Werlemann, H., Arms, cs., 60
Wyman, Chas. H. & Co., Arms, cs., 20
Wiebusch & Hilger, Arms, cs., 6
Order—Mach'y, cs. and pgs., 20

P. L. Weimer, president of the Weimer Machine Works Company of Lebanon, Pa., a widely known designer and inventor of blast furnace machinery and appliances, died at Lebanon on September 5. Mr. Weimer was born at Reading, August 3, 1830, and after having been apprenticed in the machine shops of the Philadelphia and Reading Railroad became fireman, and subsequently a locomotive engineer in the West. In 1851 he returned to Reading and became foreman of a machine shop. Five years later he started in a small way at Lebanon, Pa., works which grew steadily, until in 1880 they were organized as the Weimer Machine Works Company.

British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, WEDNESDAY, September 9, 1891.

Pig Iron warrants have been inactive, but the bulk of the available supply is firmly held by the "ring." Outsiders are still holding aloof despite the favorable statistics, showing that there is no accumulation of Scotch in warrant stores, although 74 Scotch furnaces are now in blast. Prices have averaged about 3d. higher on Scotch and 6d. on Cleveland. Hematites are the strongest of any, having advanced nearly 2/, owing to reports of improved feeling in the Steel and Finished Iron trades. Exports last month 94,000 tons, against 101,000 tons in August, 1890.

Pig Tin has been more active and prices have improved in sympathy with the improvement in other speculative markets. Light stocks and firmness of chief holders have also favored improvement. Straits shipments heavy, but deliveries also large and the visible supply only slightly increased. Consumption is larger.

Copper flat early in the week, with sales of Merchant Bars at as low as £52. 1/3 on Thursday, but latterly turned stronger under the influence of increased consumptive demand, chiefly for electrical purposes, and sales at £53. 6/3 spot were made on Tuesday. The improved demand operates to offset the increase 1047 tons in visible supply.

Tin Plate market has been somewhat more active. A concession in price by makers to 12/9 for ordinary Bessemers led to a number of purchases for San Francisco account, but total sales not large. More American inquiries afloat, without actual business of any magnitude. The prices offered considered much too low by makers, many of whom prefer stopping work to granting further concessions in price. Exports last month 14,000 tons, of which 5000 tons to America. In August, 1890, the total was 35,000 tons, including 25,000 tons to America. A German Tin Plate syndicate has been formed for the purpose of limiting output to actual demands.

An order has been placed for 17,000 tons Steel Plates in Glasgow for construction of a new Cunard steamer.

Manufacture of Nickelo-Spiegel.

Henry Marbeau of Paris has been granted a patent recently, which he has assigned to the Nickel Steel Syndicate, Limited, of London, on the manufacture of nickel steel through the intermediary of what he calls "Nickelo-Spiegel." We quote below from the patent specification :

In the manufacture or preparation of the binary alloys of nickel and iron known as ferro-nickel" and "steel-nickel" on a commercial scale it has been customary hitherto to employ either metallic or pure nickel, or the crude nickel or nickel mattes derived from the smelting or treatment of oxidized nickel ores, carried on only up to the point where the elimination of the iron would begin. Pure or metallic nickel is, however, a costly metal, because of the operations necessary to eliminate sulphur, silicon and other impurities. On the other hand, crude nickel or nickel mattes contain a considerable proportion of foreign substances, the presence of which in the manufacture of ferro-nickel or steel nickel is not desirable.

Now the present invention consists in the manufacture and in the employment for the production of ferro-nickel or steel-nickel of a carbureted alloy containing nickel, iron and manganese obtained by the reduction of a suitable mixture of oxidized nickel ores with iron ores and manganese ores, the reduction being preferably effected in a blast furnace.

This alloy containing nickel, iron and manganese, which may appropriately be called "nickelo-spiegel," is cheaper than pure or metallic nickel, while it is purer and less mixed with foreign substances than crude nickel or nickel mattes. It is also better adapted than the pure metal or the crude nickel or nickel mattes either for direct transformation into ferro-nickel or steel-nickel containing any desired percentage of nickel or for use as an addition for transforming cast iron, iron, or steel into alloys of iron and nickel more or less rich in carbon and in nickel.

In the preparation of the nickelo-spiegel or alloy of nickel, iron and manganese, an important proportion of manganese is employed. Very basic slags are thus obtained, which are, however, very fusible. The total reduction of the nickel contained in the ores is thus insured. The charge is, moreover, calculated so that the sulphur and silicon become completely removed.

It has heretofore been proposed to produce meltings or castings with a base of nickel and iron, or of nickel, iron and manganese, but such meltings have no resemblance to the nickelo-spiegel produced as herein described. The main difference between the composition of the present alloy and that of the meltings or mixtures above referred to is that the latter contain a large quantity of silicon and sulphur—say from 5 to 8 per cent. of silicon and 2 to 3 per cent. of sulphur—whereas in the nickelo-spiegel merely a trace of these impurities remains. The important difference in properties resulting from this difference in composition is found in the fact that the meltings heretofore made in which manganese was an ingredient could not be employed in making nickel-steel alloys, which is the chief utility of the nickelo-spiegel. The essential and novel characteristic of the process by which the nickelo-spiegel is produced resides in the employment of manganese ores or manganiferous iron ores containing manganese in such proportion as to obtain in the reduction and by one and the same operation the elimination of the silicon and sulphur. The latter impurity is not always found in nickel ores in such quantity as to prove seriously detrimental; but when such is the case an excess of manganese proportionate to the quantity of sulphur is introduced, resulting in elimination of sulphur by formation of sulphate of manganese.

The relative proportions of the nickel ores, iron ores and manganese ores will vary according to the percentage of the three metals required in the carbureted alloy. The following may be given as an example: Nickel ores (10 per cent. nickel), 2 tons; iron ores (50 per cent. iron), 12 hundredweight; manganiferous iron ores (10 per cent. manganese and 40 per cent. iron), 1 ton.

The alloy resulting from the above charge has the following composition: Iron, 72 per cent.; nickel, 20 per cent.; manganese, 5 per cent.; carbon, 2 5-10 to 3 per cent.; silicon, sulphur and phosphorus, 5-10 per cent. This is the typical alloy which I recommend for obtaining with facility alloys of nickel and steel for industrial use; but, as stated, it is possible to obtain by this process alloys richer or poorer in nickel. In such case the proportions of manganese will vary, as illustrated by the following table:

Nickel	5.0	10.0	15.0	25.0	35.0	50.0
Manganese	3.0	4.0	5.0	5.0	6.7	8.0
Iron	89.5	83.5	77.0	67.0	53.5	37.0
Carbon	2.3	2.3	2.3	3.4	4.5	4.5
Silicon, sulphur and phosphorus	0.2 0.5	0.2 0.5	0.2 0.5	0.5	0.5	0.5

It will be observed by reference to this table that the quantity of manganese increases with the proportion of nickel, though not in the same ratio.

In the employment of nickelo-spiegel for the production of ferro-nickel or steel-nickel the nickelo-spiegel can be treated directly in a converter, so as to obtain a steel-nickel or ferro-nickel containing the required percentage of nickel. The presence of an excess of manganese in the nickelo-spiegel permits of obtaining the heat necessary for the good working of the operation in the absence of silicon, or the nickelo-spiegel can be treated directly in an open-hearth furnace, so as to produce a steel-nickel containing the required percentage of nickel. The refining is obtained by the addition of iron or steel scraps or iron ore; or the nickelo-spiegel can be treated in an open-hearth furnace, just as for making ordinary steel, by starting with a mixture of nickelo-spiegel and cast iron and scrap; or the nickelo-spiegel is added to a bath or melt of ordinary steel, either in an open hearth furnace or in a converter. The nickelo-spiegel will be added either melted or simply heated to redness, either in lumps or pulverized. The addition will preferably be made when the desired decarburation has been attained, so as to avoid a subsequent oxidation of the manganese.

In the two last described methods of employing nickelo-spiegel for the production of ferro-nickel or steel-nickel any insufficiency of manganese can be corrected by additions of spiegeleisen or ferro-manganese or metallic manganese, and complete deoxidation can be effected by a final addition of aluminum or ferro-aluminum.

Architects' Commissions in Spain.

In the annual proceedings of the Italian Society of Engineers and Architects is the following schedule of commissions (*honoraria*) adopted by the Royal Academy of San Fernando, Madrid, Spain :

Local work is arranged in 13 classes, according to cost; and a sliding scale of commissions is devised in the form of percentages on the cost of each class :

Class.							
1.	Buildings to cost within					$5,000	
2.	"	"	"	between	5,000	and	$7,500
3.	"	"	"	"	7,500	"	10,000
4.	"	"	"	"	10,000	"	15,000
5.	"	"	"	"	15,000	"	20,000
6.	"	"	"	"	20,000	"	25,000
7.	"	"	"	"	25,000	"	30,000
8.	"	"	"	"	30,000	"	35,000
9.	"	"	"	"	35,000	"	40,000
10.	"	"	"	"	40,000	"	45,000
11.	"	"	"	"	45,000	"	50,000
12.	"	"	"	"	50,000	"	75,000
13.	"	"	"	"	75,000	"	100,000

Table Showing Charges in Percentage on Cost of Building.

Class.	A.	B.	C.	D.	E.
1	5.0	2.5	2.0	0.5	0.5
2	4.75	2.375	1.9	0.475	0.475
3	4.5	2.25	1.8	0.45	0.45
4	4.25	2.125	1.7	0.425	0.425
5	4.0	2.0	1.6	0.4	0.4
6	3.75	1.875	1.5	0.375	0.375
7	3.5	1.75	1.4	0.35	0.35
8	3.25	1.625	1.3	0.325	0.325
9	3.0	1.5	1.2	0.3	0.3
10	2.75	1.375	1.1	0.275	0.275
11	2.5	1.25	1.0	0.25	0.25
12	2.25	1.125	0.9	0.225	0.225
13	2.0	1.0	0.8	0.2	0.2

A—Full architectural services. B—Drawings and estimate. C—Drawings only. D—Estimate. E—Copies of drawings.

When the cost exceeds $100,000 the architect is to receive an annual stipend of $600 to $800 in addition to the 1 per cent. for drawings and estimate. If required by the owner, the architect must always render an estimate of cost. On this estimate his commission will be calculated in case the work should not proceed; likewise in case it should be executed according to plans and the total cost should exceed the estimate. If the actual cost on the same condition falls within the estimate, the architect's commission will be based on the cost instead of the estimate. When preliminary sketches only are furnished deduct 10 per cent. from the above schedule.

For buildings at a distance not exceeding 16 miles from the architect's office, the charge for superintendence will be increased by 25 per cent. in addition to traveling expenses. When the distance is between 16 and 40 miles add 50 per cent., plus traveling expenses, to the schedule charge for superintendence. If the distance be from 40 to 80 miles add 75 per cent., and for each additional 80 miles add 100 per cent., all with due regard to the conditions and exceptions previously noted.

For superintending public buildings a suitable salary is to be allowed. For designing public buildings the commission will be double the amount charged for private work. The charge for valuations of public buildings will be the same as for private ones. For verifications of considerable importance, also for monumental restorations, a special agreement will be made as to compensation.

HARDWARE.

Condition of Trade.

THERE IS AN evident increase in the volume of business and travelers are sending in good assorted orders. Manufacturers in most lines report a satisfactory demand, which is, however, regarded as fair rather than heavy. While a confident feeling pervades business circles, it is evident that buyers are pursuing a conservative course, and are not placing orders in excess of their early requirements. The fact that prices remain substantially where they were without any important or general improvement is regarded as somewhat surprising, in view of the excellent prospects for business during the remainder of the year. But it is thought that with the setting in of a heavier demand there will be an improvement in the tone of the market, with advances in some lines.

The following advices from Lee-Clarke-Andreesen Hardware Company, Omaha, Neb., did not reach us in time for use in our last issue. They will be of interest as representing the condition of things in that market:

As the season advances and the prospects for an exceedingly large corn crop continue, the trade horizon appears to brighten. While it will be some time before all the money from the fall crops will be placed in circulation, its influence is already felt. People are confident of greatly improved conditions later in the season, and are to some extent already discounting them. Every week shows an improvement in the general feeling. For some time past the retail trade has been buying from hand to mouth, but as the season has advanced they have gained in courage, and are now willing to anticipate their wants and assume some obligations. Trade among jobbers for the past two weeks shows some signs of improvement, though the volume is not quite as large as was expected. Money appears to be in good supply for other than speculative requirements. Local bankers are receiving demands from country banks for money to be used in moving the small grain crop. As soon as the movement of this part of the crop is fairly inaugurated, the circulation of so much money cannot but have a beneficent effect upon all lines of business.

Chicago.

(By Telegraph.)

The heavy Hardware trade continues to increase, being now very much ahead of last year at this time. It is very remarkable that the demand should continue so large without having any perceptible effect on prices, which are standing about where they were several months since. Seldom have they been so steady for such a period of time. Business in Shelf Hardware is not only steadily gaining, but collections have latterly shown marked improvement. Money is now coming in freely from every section but those in which harvests have been latest. Ease in money has steadily followed the progress of the crops, and in two or three weeks all cause of complaint on this head will probably completely disappear. Staple goods are moving more freely. Prices are quite steady, but an upward movement is expected with the improved feeling in Iron circles. Tin Plates are unchanged, except that Milk-Can Sheets have been slightly advanced. Sheet Copper is still low, but jobbers are now trying to get 19½ cents as a basis.

St. Louis.

(By Telegraph.)

The increased trade noted last week continues. Traveling men are sending in good round orders, and the mail order trade is above the average. Country dealers are buying freely in anticipation of a large fall trade, which they confidently expect will begin as soon as the crops have been harvested. Shelf Hardware continues to be in good demand, Wire Nails are droopy, and some low prices have been made. The demand for Barb Wire has eased off somewhat, but prices are unchanged. Fire Arms and Ammunition are ordered freely. There is no improvement in Copper and the demoralization seems complete. Local dealers are busy and are well satisfied with the outlook.

Notes on Prices.

Barb Wire.—The market is running along in a more satisfactory condition for both jobbers and manufacturers than for a long time. The new schedule of prices is adhered to with a fair though not heavy volume of business. It is anticipated that before long there will be a decided improvement in the demand.

Chicago, by Telegraph.—Barb Wire manufacturers report orders coming in freely and the prospects of an early development of a heavy demand growing constantly bright. During the past fortnight no less than four more manufacturers have arranged to sell their product through the Columbia Patent Company. Some of these have taken out licenses to manufacture and may, therefore, be regarded as new establishments. Jobbers report their demand steady, but not showing much improvement as yet. Quotations are firm on the new schedule.

Cut Nails.—The Cut Nail market remains in a rather unsatisfactory condition without change in prices. There is some unevenness in the figures quoted by different mills, but quotations are on the basis of $1.50 to $1.55 for Steel or Iron Nails in the Eastern district in round lots, at mill, with 25 or 30-cent average. Nails in the Wheeling district are held at $1.60, though some mills name a slightly higher figure. The demand is referred to as fair, with indications of improvement in the near future.

Chicago, by Telegraph.—Steel Cut Nails are in moderate demand. All the conditions of the trade are favorable to an advance in prices, and the low rates now ruling are evidently the fault of the manufacturers themselves. Some factories are so well supplied with orders that they are not soliciting business. Others report their August trade so heavy that they are looking for better prices on orders now coming in. But there are some concerns who were left out in the cold in some way, and they are now the weak sellers. Orders have been taken here in the past few days at $1.67½, Chicago, 25-cent average, for Wheeling Nails. Other Wheeling factories ask $1.70, Chicago, 35 cent average. Jobbers quote $1.75 to $1.80 for small lots from stock.

Wire Nails.—The demand continues good, a number of buyers who had not previously placed their orders taking advantage of the low figures now ruling. Some of the mills are well supplied with orders, but there has not been as yet any perceptible stiffening in prices. Quotations are on the basis of $1.85 to $1.90 for carload lots at mill, and $2 to $2.10 for small lots from store.

Chicago, by Telegraph.—Trade has not been so active since the first of the month, as heavy buyers were well covered in August. The demand is now scattered but some sellers report quite a fair business coming in from their customers. The ruling rate for factory shipments is now about $2. Chicago jobbers quote $2.10 to $2.15, from stock.

Loaded Shells.—There is considerable difficulty in obtaining goods from manufacturers in sufficient quantities to meet the requirements of the trade, and some leading makers are refusing to accept further orders. The price remains without change.

Wrought Iron Pipe.—The prices adopted by the manufacturers the early part of August are fairly well maintained, but are shaded in some cases. Ruling prices are recognized as exceptionally low, and some in the trade consider it an advantageous time to place orders.

Ammunition.—The time for which prices are guaranteed has recently been extended to November 1, instead of October 1, as heretofore. There is otherwise no change in the situation to report.

Tacks.—There has recently been little change in the condition of the Tack market, prices continuing substantially as they have been for some time, with a good deal of irregularity in the quotations of the different makers and on the various kinds of goods. There is, however, more agreement as to base discounts, those named by the Atlas Tack Corporation being to a good extent adopted by other manufacturers. It would serve the convenience of buyers if they were followed by all the makers and recognized as the standard base discounts.

Sheet and Bolt Copper.—The weakness which has for some time characterized the market in Sheet and Bolt Copper still continues, and prices are low and irregular. The goods can be purchased at from 3 cents to 4 cents off the list in ordinary lots, and special prices are made on large purchases. There appears to be no concerted agreement among the manufacturers in regard to prices, some of them refusing to meet quotations made by others.

Cabinet-Makers' Benches.—The following are the prices to the trade on the Cabinet-Makers' Benches manufactured by Grand Rapids Hand Screw Company, Grand Rapids, Mich., a description of which is given on another page. It is subject to a discount of 35 per cent.:

Regular size Cabinet Bench	$10.00
6½ feet long by 30 inches wide, with 16-inch maple top	11.00
7 feet long by 30 inches wide, with 16-inch maple top	12.00

Maslin Kettles.—The manufacturers of Maslin Kettles are making an effort to advance prices beyond the low figures which have for some time prevailed, and the market in this line may be referred to as in an improved condition, though it is still characterized by considerable irregularity. Under date September 1 the Stuart-Peterson Company, Philadelphia, announce the withdrawal of prices on Maslin Kettles and an advance to 70 per cent. discount.

Glass.—The failure of the committees to agree on the gatherers' advance in wages, which we reported last week, has thrown nearly 10,000 laborers out of employment who are connected with the Window Glass industry. About 8000 of these are employed in the Glass works, while the balance procure sand, clay, and do other work connected with the factories. The average monthly capacity of the Window Glass works in the United States is 160,000 boxes of Glass. It is reported that the workers' Wage Committee claim that in former years they had authority to make the best settlement they could, but that this year their hands were tied; also that no settlement could be made for seven weeks, as it takes that length of time for a vote of the association to be taken. When a start is made at the Glass factories it requires two weeks to heat the pots, and about the same length of time to get a sufficient quantity of Glass blown and flattened to start the cutters upon. With poor assorted stocks of Glass at the factories, and probable orders calling for special sizes, it would be another month before an assortment of Glass would be accumulated from which carload orders could be filled. It will be seen that the date at which the new stock of Glass will be marketed is indefinite. The meeting of the Glass importers will be held too late for a report of the action taken to appear in this issue. It is reported that the first finished Plate Glass was turned out at the factory of the Pennsylvania Plate Glass Company, Irwin, Pa., on September 2. Quoted prices remain unchanged, as given below; the discounts on imported Glass have, however, been shaded during the past week: American Window Glass, in carloads, 80 and 10 per cent. discount; less than car lots, 80 and 5 per cent. discount: French Window Glass, 75 and 10 and 5 per cent. discount, with an additional 5 per cent. discount when 50 boxes are ordered and taken in any calendar month. American Plate is held at discount 50, 10 and 5 per cent., and Imported Plate at discount 60 per cent.

Hardware Protective Associations.

FROM AN ARTICLE in a recent number of the London *Ironmonger*, it seems that the retail Hardware men of the United Kingdom have just cause for complaint against manufacturers. The subject is treated under the head of "Wholesale and Retail Once More," which subject, it is remarked, like the poor, is almost always with them. This trouble is said to crop out with almost the regularity of the calls of the tax collector, and even when there is no apparent disturbance on the surface it is a source of annoyance to many tradesmen. It appears that in the dull seasons of the year the manufacturers solicit trade from the regular customers of the Hardware men through traveling salesmen or letter quotations. The manufacturers even go so far as to interfere with the business of the Hardware trade, upon whom they are dependent for the distribution of their goods, and at prices almost as favorable as those offered to the trade. They are also accused of selling to customers of the retailer, who had been sent to the manufacturer only for the purpose of inspecting samples. Referring to this unprincipled way of doing business, the writer goes on to say:

It needs no reflection to arrive at the conclusion that manufacturers cannot in common fairness expect to do business with the public and with the ironmongers at one and the same time and at the same prices. The ironmonger may not be perfect either as a man or as a tradesman, but he is entitled to proper consideration, and he is bound to live by his business. In not a few instances the ironmonger has done a good deal to build up the business of manufacturers who afterward endeavor to "run with the hare and hunt with the hounds," so that to put the matter on the lowest grounds, the ironmonger is decidedly entitled to fair play, even if the element of gratitude is wholly lost sight of by over-keen manufacturers. But there are many arguments of greater cogency than this in favor of the ironmongers—arguments which are so obvious to all men of experience in the trade that they do not need to be recapitulated here. Some manufacturers, however, turn a deaf ear to the arguments of the ironmongers, and appear to have arrived at the conclusion that they can afford to solicit orders, or, at all events, accept them, from the public, at the same time as they are seeking business from ironmongers. Under some conditions this might be permissible, but only when there is a sufficient margin in prices to allow for the time, trouble and expenses of the ironmonger.

It is considered bad enough when the London co-operative stores are supplied with goods on terms which allow them to undersell the Hardware trade, but still worse when the manufacturers themselves take orders from the public direct. A remedy for this condition of affairs is suggested by the formation of a National Association of Ironmongers for the protection of the retailers. An instance is cited where five local ironmongers have protested against a firm which is held to have acted unfairly toward them.

The trouble of manufacturers and jobbers interfering with the retail trade in this country is not wholly unknown. Local protective associations have been formed in cities and larger towns among the retail Hardware, Stove and Housefurnishing dealers, which in time will perhaps result in a National Association. It would be of advantage to the local dealers, even in the smaller places, if they would lay aside their trade rivalry so far as to organize associations and hold regular meetings as often as the urgency of the case required. The objects of such associations would obviously be to put a stop to the practice of manufacturers and jobbers selling goods to customers of the members; to regulate prices among themselves, and thus prevent ruinous cutting; to devise plans to bring retail business down nearer to a cash basis; to restrict the selling of goods to undesirable customers on credit; to have State lien laws made more favorable to retailers, and to act on many other questions of vital interest, which would naturally be brought up at the meetings.

Trade Items.

THE BISSELL CARPET SWEEPER COMPANY of Grand Rapids, Mich., have just opened a branch house in London, at 47 Wilson street, Finsbury Square, E. C. They have secured a large three-story brick building, in which a large stock will be carried. James L. Pollitt is manager, and three traveling salesmen will be employed. This is expected to be quite an important branch, and will handle perhaps a third of the business of the company. They maintain agencies in Paris, Rotterdam and Hamburg, but not branch houses. In all there are now 22 foreign countries in which the Bissell Sweepers are sold regularly through agents. Australia will probably be the next point for the establishment of a branch house, as the company's trade there is growing rapidly.

THE GRAND RAPIDS REFRIGERATOR COMPANY of Grand Rapids, Mich., are getting out an entirely new line of Refrigerators for next season. The internal arrangements will be continued, but the exteriors will be completely changed. The hinges, handles, locks and other Hardware will be of new and strikingly original designs, while the carving, especially on the sideboards, will be exceptionally rich. The company's factory is now completely filled with machinery or otherwise used by the manufacturing department, so that storage room has to be engaged outside.

HAYDOCK & BISSELL, 12 Murray street and 15 Park place, New York, make an announcement among the Special Notices in regard to a peremptory auction sale of 500 Double Barrel Breech Loading Guns on Wednesday, September 16. It is stated that the Guns are all in good order with tested barrels, comprising the largest assortment ever sold at auction, including

as it does fine Steel Twist Damascus and Laminated Steel Barreis, with bar and back action, rebounding locks, top and side snap action, assorted lengths, weights and bores. The catalogue will be sold without any reservation.

THE GOSHEN SWEEPER COMPANY removed about a year since from Goshen, Ind., to Grand Rapids, Mich. They have built a fine brick three-story factory, stocked it with special machinery and are now turning out about 200 Carpet Sweepers daily. Their capacity if pushed would be considerably in excess of this number. The business of the company has been increased very largely since their removal.

THE UNION METALLIC CARTRIDGE COMPANY, Bridgeport, Conn., and 313 Broadway, New York, are putting on the market a Shell specially designed for trap shooting in 12-gauge Guns, which they designate as the U. M. C. Club Shell, Special loads A, B and C. These loads are described as formulated with great care and accuracy, giving a high velocity and close and uniform pattern with great penetration, and thus possessing the essential features for a successful trap load. The quality of the powder is also specially referred to. The system of wadding has been arrived at after experiments so as to make the Shells suited to both American and foreign-bored Guns. The point is made that dealers will find it to their advantage to handle these loads as they will answer the requirements of the shooter, while it will not be necessary for them to carry so many different loads or so large a stock. The following description of the load is given:

A is 3 x 1⅛ 8....$26.00 B is 3 x 1¼ 8.... 27.00 C is 3¼ x 1¼ 8.. 27.50	}	List same as regular 12 Gauge.

In ordering it is necessary simply to specify A, B or C load.

ANNOUNCEMENT IS MADE under date September 4 that Geo. H. Ismon of Salem Wire Nail Company, and A. H. Saxton of Alfred Field & Co., have been appointed trustees for the bankrupt stock of Bernard Dreyfuss, New York. The same will be offered for sale for the next three weeks.

THOMAS COLDWELL, president of the Chadborn & Coldwell Mfg. Company, Newburgh, N. Y., has retired from that company, having disposed of his interest. The stock formerly owned by him has been purchased by other members of the organization. The business of the company will be continued in the same manner and without radical change in method Mr. Coldwell was one of the founders of the business and had been president since its incorporation.

FRED. NOURSE announces under date August 31 that he has established a factory at 162, 164 and 166 West Twenty-seventh street, New York, for the manufacture of Steel Wire and Springs. In the circular referring to the matter he states, that having been superintendent of the factory of the Cary & Moen Company, recently closed by the receiver, in which capacity he has heretofore executed orders, he solicits a renewal thereof, confident that he can fill them with satisfaction.

FRIEDENWALD BROS., Baltimore, Md., in their advertisement on another page, illustrate their Triumph Automatic Cellar Drainer. As will be inferred from its name, this article is intended for the removal of water from cellars, and the manufacturers allude to the efficiency with which this is accomplished.

R. B. PORTER & SON, Baltimore, Md., announce the death, after a short illness, on August 23, of John A. Adams, who was for many years one of their traveling salesmen. The section formerly covered by him will thus be temporarily unrepresented, but the firm will in a short time send out another salesman, whom they hope will be as favorably received as was the deceased.

THE ALASKA REFRIGERATOR COMPANY announce their removal from Michigan City, Ind., to Muskegon, Mich. After September 1 all communications should be addressed to the latter place. They advise the trade that they have erected a very large plant at Muskegon, complete in all its appointments, which will greatly increase their facilites, and enable them to meet all demands with promptness.

G. W. BRADLEY'S SONS, Westport, Conn., for whom Martin Doscher is agent, 88 Chambers street, New York, call attention to the fact that their Genuine Axes are labeled G. W. Bradley with the trade-mark, and caution the trade against infringements

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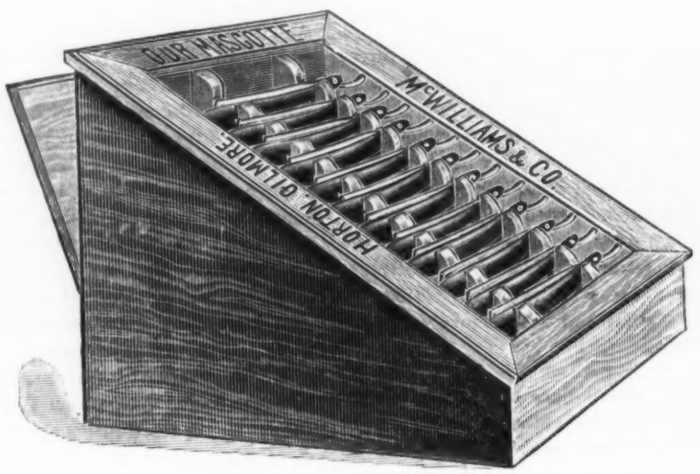
C. R. WINDHOEVEL & SON of Philadelphia, who have long been established as jobbing grinders and polishers of Cutlery and Instruments, have recently enlarged their quarters, with the intention of making high-grade Cutlery and Razors.

THE PROPRIETORS of the Bailey Auger Bit Company, Lancaster, Ohio, and Harriman Mfg. Company, Harriman, Tenn., have together removed the former concern from Lancaster to Harriman. The company have, we are advised, a paid-up capital of $20,000, and will have an authorized capital when their by-laws are adopted of $50,000. Buildings for the Harriman Company are about completed, and the machinery, having been removed from Lancaster, is now being placed in position. The company will continue the manufacture of the Bailey Patent Auger Bit. This removal is attributed to the advantages possessed by Harriman as a manufacturing center.

Ornamental Razor Case.

HORTON, GILMORE, McWILLIAMS & CO. of Chicago have brought out a new Case to take the place of the revolving plush Case which was formerly given to purchasers of a certain quantity of their Mascotte Razors. The Case, which is herewith illustrated, is arranged to hold a dozen Razors on display, which are placed in racks on an incline. A glass top covers the Razors, free from dust and dampness. The lid is lined with felt around the frame work, to make a tight fit. The Case is made of gumwood, highly polished, lined with red plush. A door in the rear can be opened, so that stock can be kept inside the lower part of the Case. It is intended to be given with every first order for a dozen Razors.



Ornamental Razor Case.

Trade in Texas.

IN ANSWER to a large number of inquiries sent to wholesale and retail Hardware merchants in Texas, regarding the condition of business, we find that reports vary in different locations. Taken as a whole, large crops are anticipated, and the amount of business done will depend entirely whether planters realize satisfactory prices for cotton, corn, &c. The prevailing drought in July had a depressing effect upon business. Merchants are not crowding credit sales, while farmers are showing a conservatism in purchasing not usual at this season of the year, consequently the volume of business is not up to that of 1890. From Waco we have the following advices·

All those concerns which have been reasonably well managed and have not indulged in outside speculation seem to be in a sound, healthy condition, but that class which took "flyers" and were eager for their share of "chicken pie" when the real estate boom was all the rage are all embarrassed at present.

Cash sales and collections have been light since March, 1891, in some sections of the State. While dullness at this season of the year is not unlooked for, business generally in Northern Texas has been good, but less encouraging reports reach us from the middle and southern parts of the State. The condition of the Lumber business, upon which the country about Jefferson is largely dependent, is not good. A correspondent from Terrell remarks:

If anything the Hardware business is less active than other lines, due in a great measure to the pressure of money matters, to the decline in real estate and to little being done in building. Stocks of Hardware are, as a rule, light, although in some cases merchants who made heavy purchases last fall have been obliged to carry many goods over. Merchants are

inclined to buy in limited quantities, as prices at which goods are sold are somewhat demoralized, while a large fall trade is not yet a certainty.

An Austin correspondent describes the situation in the following terms:

Prices have been cut in many instances, causing the net profits to fall below the legal earnings of capital in this country. Crop prospects in some sections were never better, as there will be a good crop of wheat, oats and corn, while cotton never looked more promising.

Other parts of the State have suffered from hot and dry weather, which has retarded the growth of cotton. It is not generally expected that fall trade will be heavy. This is due to the fact that a large part of each crop is usually spent before it is made, and that prices paid for cotton will doubtless be low, in which case many farmers will find themselves in debt. Referring to the crops in the vicinity of McGregor, a correspondent writes:

The grain has turned out well, but there was a smaller acreage than for the past ten years. Corn will fall 12½ per cent. below last season's yield and cotton 20 per cent. Merchants will have to carry 25 to 33⅓ per cent. of credits over. Fall business, it is agreed by all, depends upon the price paid for cotton.

The Alien Land law has affected building prospects to a large degree, as much capital is being withdrawn from the State on account of this law. In some sections, however, buildings are being erected, and general improvements are being made. While the farmers in most parts of Texas will harvest large crops, probably the largest for years, the extremely low prices of cotton are likely to have a depressing effect on trade, as it is predicted that the planters will realize hardly enough from their present crops to pay for the cost of production where cotton is produced by hired labor. Low prices are also ruling for small grain and beef in some sections. The year's balances are usually settled in October, when the cotton comes in. At the present time, which is between seasons, collections are inclined to be slow. Traveling men report that buyers are conservative and disposed to be cautious, awaiting further developments before stocking up heavily. This condition of affairs gives a generally healthy tone to the business situation. The wool interest is a large factor in trade in some sections, and the pecan crop is promising. A correspondent from San Angelo writes:

All seem to agree that we have a bright future. As an instance, three seasons ago three bales of cotton were raised here; the next season, 278 bales; last season, 1000 bales; this year we expect to have 3000 bales.

Since the Farmers' Alliance in the section surrounding Pilot Point has partially out-lived the spirit of antagonism toward the merchants, they look for better times, better trade and better profits. There are complaints from some parts of the State of dissatisfaction among farmers. Referring to this matter, one firm say:

There is too much political wrangling going on in the country; too much sub-treasurer talk and free-coinage talk among the people. Trade will remain depressed until these matters are adjusted by the conservative element of the country.

A large immigration is expected to flow into the State this fall, and with the revival of business confidence and of trade throughout the country, Texas will doubtless be favorably affected.

Catalogue of A. Baldwin & Co., Limited, New Orleans.

WE ARE IN RECEIPT of a copy of a catalogue just issued by the widely-known house of A. Baldwin & Co., Limited, importers and jobbers of Hardware at New Orleans, La. It is a magnificent volume, comprising no less than 1024 pages, superbly printed, profusely illustrated with handsome cuts, and substantially yet elegantly bound in half morocco, with heavy board sides. The finish is as complete as that of many a presentation work intended to grace a center table. The body of the book is printed in a rich blue-black ink, while every page is inclosed in a full red line border, with the firm's name artistically wrought in as part of the border. The title page is adorned with a cut of the firm's stove building, which is a large structure, partly five and partly six stories in hight, located on the corner of Camp and Common streets. The preface informs us that, so far as the firm know, this is the first large Hardware catalogue published in the South. The house was established in 1822, and has increased its sales until it stands at the present time among the foremost in the Southern trade. No account sheet is issued to accompany this catalogue, but the firm will take great pleasure in replying promptly to any inquiries in regard to goods and prices. The names of the officers are as follows: A. Baldwin, president; H. F. Baldwin, R. S. Day and A. Baldwin, Jr., directors; C. Eustis, secretary and treasurer.

The catalogue is arranged in departments, which are enumerated, together with the pages occupied, in the following order:

No. 1. Builders' and General Hardware.....Pages 1 to 564
No. 2. Harness, Saddles, Carts, Wagons and Saddlery Hardware.....Pages 565 to 636
No. 3. Stoves, Ranges, Refrigerators and House Furnishing Goods .....Pages 637 to 756
No. 4. Table and Pocket Cutlery, Guns, Rifles, Revolvers and Sporting Goods. Pages 757 to 878
No. 5. Agricultural Implements, Machines, Hand Tools and Plantation Supplies. Pages 879 to 970
No. 6. Pumps, Saw Mills, Lumbering Tools and Steam Engines and Boilers..Pages 971 to 1024

The index is placed in the front of the book and covers 10 pages, with three columns to a page. The alphabet is arranged on the margin to facilitate reference to the index. Another aid to the eye is the arrangement of names of articles coming under a general head in hanging-paragraph fashion—that is, with the leading name flush with the front of the column, and the classes under it removed a generous space to the right. It will be observed from the departments above named that the house carries a very general assortment of Iron and Steel products in addition to what is commonly known as Hardware, but the Hardware line is unusually full and complete. The catalogue was compiled and arranged by W. St. John Wolseley, whose achievements in this direction in connection with other houses have given him an established reputation as a catalogue expert. The mechanical execution of the catalogue was under the direction of Emmor Kimber, contractor of catalogues, Kansas City, while the printing was done by Geo. W. Crane & Co. of Topeka, Kan.

Price-Lists, Circulars, &c.

GLEASON & BAILEY MFG. COMPANY, Seneca Falls, N. Y., and 189 Mercer street, New York: C. I. Fittings for steam, hot water, air and all hydraulic purposes, for Wrought Iron Pipe. A complete price-list and list of sizes, of these special and regular Fittings are given. They claim that by their process of casting the Fittings, the scale, which is the strongest part of the castings, is preserved and not destroyed by cutting the thread. They state that the demand for these Fittings has caused them to greatly increase the line, beyond their anticipations when they first began to manufacture them.

THE EUSTIS MFG. COMPANY, New York, Puritan Cooker: A long folder, which, when folded up, presents the appearance of an envelope, fastened with a red seal, addressed "Have You Seen It?" Upon opening it each successive fold contains printed matter relating to the Cooker, while near the end of the sheet an illustration is given of the Cooker, with the sides cut away so its construction may be seen.

SIDNEY SHEPARD & CO., Buffalo, N. Y.: Stove Boards. In offering the trade their 1891 line of Stove Boards, the above firm refer to their excellence in all points. The list prices correspond to those of the American Stove Board Company, which were given in *The Iron Age* August 27. They also issue a price current of seasonable goods, fall of 1891. Illustrations are given of Coal Hods and Vases, Fire-Irons and Shovels, Oil Cans, Dripping Pans, Lanterns, Dampers, &c.

CAMPBELL CUTLERY COMPANY, Syracuse, N. Y.: Sliding Display Trays. The Trays are made for any show case, and so arranged as to utilize the whole space from top to bottom. Pocket and Table Cutlery, Razors, Corkscrews, Scissors, Rules, &c., may be displayed on the Trays to advantage.

CRAIGHEAD & KINTZ COMPANY, 33 Barclay street, New York, and Ballard Vale, Mass., Artistic Bronzes, Metal Goods, Piano and Banquet Lamp, Oil Fixtures, &c.: The 1891-92 catalogue of Lamps and Oil Fixtures, &c., issued by the above firm contains nearly 200 pages of illustrations with price-lists, many of the plates being colored. Special attention is directed to their Daylight Lamps, which are referred to as giving a brilliant and steady light. There is a device for lighting the burner without removing the shade or chimney, and the burner can be re-wicked with facility. The book will without doubt receive a welcome from those interested in this branch of the business.

LUTHER BOARDMAN & SON, East Haddam, Conn.: Illustrated catalogue and price-list under date August, 1891, of Electro Silver Plated and Nickel Silver flat Table Ware. Spoons, Forks, Butter Knives, &c.; also Britannia Spoons. This contains the revised prices adopted by the American manufacturers of Spoons and Forks, which took effect July 1, 1891. The catalogue is nicely arranged, with the various lines of goods on different colored paper, the book being indexed through.

Arrangement of Stores.

A CONVENIENT manner of keeping Hammers and Hatchets in a retail stock is shown in Fig. 683. Shelves are arranged with room enough between them to admit of the handles of these goods being placed in the shelves, without the heads of the tools coming in contact. The tools present a fine appearance, while the

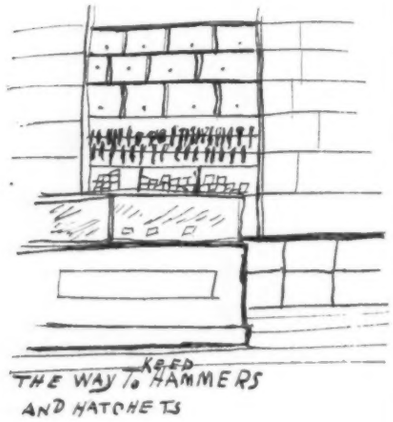


Fig. 683.—From the Original Sketch.

customer can point out the style he desires shown him, without the tools being unnecessarily handled. We reproduce the sketch as it was received from a correspondent, who advises us that he makes no pretensions to being an artist. Fig. 684 shows it in better form, as it comes from our engraving department. We are glad our correspondent was not deterred from sending us his plan of keeping these goods simply because he could not draw

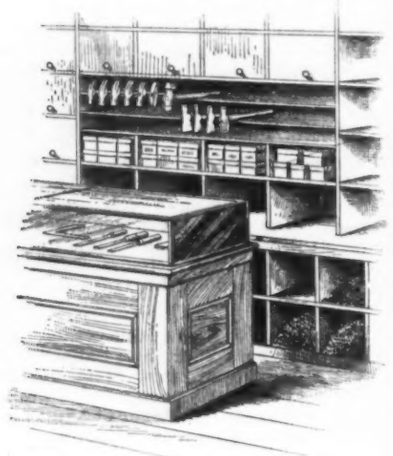


Fig. 684.—Taken from Fig. 1.

well, as the idea will doubtless be new to many of our readers. Fig. 685 shows a plan for utilizing the side of a stairway as a steel goods rack. This sketch was accompanied by a description giving measurements and other necessary details, so that our artist was able to show it, Fig. 686, as it appears in the store. We have not reproduced Figs. 683 and 685 for the purpose of casting any reflection upon their authors, nor were these sketches selected from the hundreds received by us for illustration because they were particularly crude; as, in fact, we have received many that were much more difficult to understand. We wish, however, to assure our readers that a knowledge of perspective or mechanical drawing is not necessary to enable them to present their ideas in a way in which they can be understood by us. It naturally follows, however, that the more correct the drawing the more satisfactory will be the reproduction and with the least delay and labor.

Many of our illustrations of Hardware store arrangement are made from photographs, which are in some respects preferable to drawings, as all the details are more fully brought out. It is often difficult to obtain a good photograph of the inside of a room, especially when the light is poor, but a very inferior photograph, if it shows the method of arrangement, may serve as the basis of an excellent illustration. Photographs or drawings should be accompanied by a full description of the subject, with measurements where it is necessary, and such other particulars as may be requisite for a complete and intelligible description. We allude to this matter because we feel confident that a

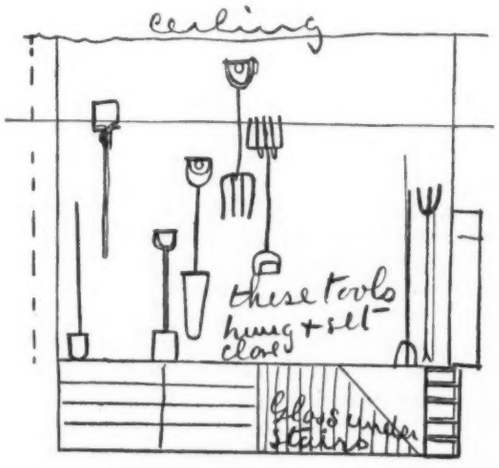


Fig. 685.—Sketch (reduced) Furnished by a Correspondent.

large number of our readers have novel and unique arrangements for containing or displaying goods, and improved or new methods of carrying on business which would be of much interest and benefit to Hardwaremen, and of which we would

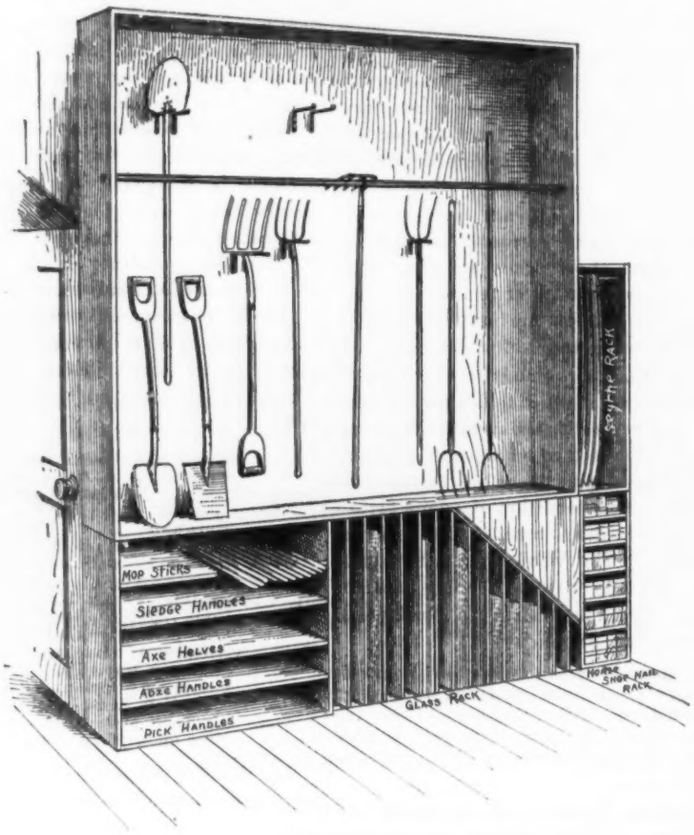


Fig. 686.—Our Artist's Idea of Fig. 685.

be pleased to make use. Numerous letters attest to the benefits which have been received from such illustrations and descriptions, and we invite the further cooperation of our readers in furnishing descriptions of other desirable methods of Hardware store arrangement.

It Is Reported—

That Biederman & Harmon, Hardware and Stove dealers, North Baltimore, Ohio, have dissolved partnership. I. L. Harmon will continue the business, while Paul Biederman will travel for his health.

That John Woodruff, Hardware dealer and Banker, Dunkirk, Ohio, has struck a large gas well, and is piping the gas through the principal streets of Dunkirk.

That Stevens' Hardware store at Oakland, Maine, was burglarized on the 29th ult. The amount stolen was small.

That W. H. Hitchcock, dealer in Hardware and Stoves, Palmer, Mass., has taken possession of his new building.

That John Flora and John Donahue have formed a partnership and will soon open a Hardware store at Mossy Creek, Tenn.

That the Cunningham Block, in Riverside, Cal., will soon be ready for the Hardware firm of Wood & Cunningham.

That G. E. Howard & Co., Wood River, Neb., have sold their stock of Hardware, Stoves, &c., to F. N. Taylor, who proposes to continue the business at the old quarters.

That Lobeck & Linn have recently entered the Hardware business at Omaha, Neb.

That Conlee City, Wash., has an opening for a Hardware store.

That Bordewick & Co., Gillette, Wy., have opened a complete line of Hardware.

That Samuel Slemmens will open a Hardware store at Garrison, Col.

That a new brick building will be erected in Amboy, Minn., to be occupied as a Hardware store by Hobenstein Bros.

That Baker & Bissell, wholesale Hardware dealers at Sioux City, Iowa, are moving into their new building.

That Williams Bros.' new Hardware store at Logan, Iowa, has been opened and they are now ready for business.

That Mr. Munger of the Hardware firm of Munger, freeman & Co., Detroit, Mich., has sold his interest to T. J. Chamberlain, who was for a number of years in the employ of Buhl Sons & Co.

That J. Wade has bought a half interest in the Hardware firm of D. B. Hubert, Summersville, Ore.

That the Valley Hardware Company have recently commenced the Hardware business at Saginaw, Mich. The storeroom is 120 x 22 feet, the shelving being over 90 feet long. A very complete stock is carried, embracing Hardware, House Furnishing Goods, Cutlery, Paints and Oils, &c.

That Walter Darwent has recently opened a Hardware store at Clark, Mo.

That D. W. Stiver's new Hardware store at Huron, S. D., will soon be ready for occupancy.

That Holliday & Templin contemplate erecting a new Hardware establishment at Greentown, Ind.

That Bailey & Sturken, dealers in Stoves, &c., Loganport, Ind., have dissolved

That G. W. Harris of G. W. Harris & Co., Hardware, Brighton, Mass., has retired from the firm, leaving the business to his sons, George B. and Ira R. The firm will hereafter be known as Harris Bros.

That A. L. Gust contemplates opening a Hardware store at Sidney, Ill.

C. B. Butler has bought out the Hardware stock formerly carried by the late C. J. Tinkham, and will conduct the business at the old stand.

That H. Schmidt is closing out his stock of Hardware at Carl Junction, Mo., and will return to St. Louis. G. B. Scott will occupy the old stand and continue the business.

That W. H. Duncan, dealer in Hardware at Lawrence, Kan., was robbed on the 27th ult.

That J. B. Talbot is a new Hardware dealer at Hutchison, Kan.

That Been & Schorke is the style of a new Hardware and Agricultural Implement firm at Deepwater, Mo.

That Edward Tea and Allison Hunter have engaged in the Hardware business at Chicago Junction, Ohio.

That Jones Bros., dealers in Hardware, Richmond, Ind., have dissolved, H. J. Jones retiring. S. E. Jones will continue the business.

That Bridges & Houssel have recently commenced the Hardware and Implement business at Vernon, Texas.

That William Rabe, dealer in Hardware, Guns, Implements, &c., New Bremen, Ohio, has disposed of his business to William Fahrenhorst and William Grothaus.

That W. J. Thompson has started in the Hardware business at Yarmouth, Nova Scotia.

That the Hardware establishment of Curtis & Rand, Waco, Texas, was destroyed by fire on the 17th inst.

That Coulter & Co., dealers in Hardware, Perrysville, Ohio, were robbed on the 13th inst. About $100 worth of Cutlery was secured by the thieves.

That the large Hardware establishment of S. B. Hubbard & Co., Jacksonville, Fla., was entirely destroyed by fire on the 17th inst. The loss is estimated at $50,000.

That a new Implement store is being erected at Julian, Neb., to be occupied by the Brock Hardware Company.

That A. Young of Somerville, Mass. has bought out J. J. Fairbanks' interest in the firm of Stone & Fairbanks, dealers in Hardware, at Gardner, Mass. The style of the new firm is Stone & Young.

That Albert Steinbrick has opened a new Hardware and Tin store at Tiffin, Ohio.

That the Hardware store of J. F. Seas & Son, Orrville, Ohio, was burglarized recently. Cutlery and Revolvers to the value of $50 were taken.

That Young & Elliott of Canonsburg, Ohio, have dissolved partnership, Mr. Young retiring. Mr. Elliott will continue the business.

That W. D. Morris & Co. are successors to Cooper, Morris & Co., dealers in Hardware, Terre Haute, Ind., C. W. Cooper's interest having been purchased by the other partners.

That E. A. Erickson, dealer in Hardware, at Currie, Minn., has removed to Fulda in that State.

That E. T. Gardner, dealer in Hardware, &c., Arcadia, Neb., has been succeeded by Goddard Bros.

That McCrea & Diefenderfer, dealers in Hardware, at Sheridan, Minn., have dissolved partnership.

That Fuller & Smith have opened a Hardware store at Forest City, N. Y.

That Reynolds & Ryan, Dalton, N. Y., will put in a stock of Hardware.

That W. J. Richardson, dealer in Hardware, at Wawanesa, Manitoba, has disposed of his business at that point and removed to Vancouver, B. C.

That Reusch & Coffey, Hardware merchants, Madison, S. D., expect to move into new quarters about September 1.

That W. S. Haltorn has bought an additional interest in the Hardware firm of Haltorn, Tarleton & Co., Martinsville, Ind.

That Van Gohren, Parker & Co., Greeley, Col., have sold their Hardware business to Stokes & Hammett.

That E. Baird & Co. are a new Hardware firm at Gainesville, Fla.

That Charles Stewart, dealer in Hardware and Stoves, Henderson, Texas, has sold out to Arnold & Lacy.

That H. Henwood has opened a new Hardware store at Calumet, Mich.

That E. C. Josten has succeeded Josten & Bauer in the Hardware business at La Crosse, Wis.

That F. Thayer will probably buy C. C. Hurley's Hardware store at Phœnix, Ariz.

That D. D. Kimball, dealer in Hardware, Rochester, Minn., has sold out his business to A. A. Cady.

That W. A. Waugh has opened a Hardware store at Eskridge, Kan.

That R. C. Wilson is negotiating for the stock of the Kelley Hardware Company, Pittsburg, Kan.

That Simms Bros.' Hardware store at Sweet Springs, Mo., was damaged by fire on the 16th inst. The loss is about $1000, fully covered by insurance

That the brick work on the three-story addition to the building of the Knapp & Spalding Hardware Company, wholesale dealers in Hardware, Stoves, Agricultural Implements, &c., Sioux City, Iowa, has been completed.

That O. R. Diggs, Hardware, Berkley, Va., has moved to larger and more commodious quarters in that place.

That T. J. Wood contemplates building a new store for his Hardware business.

That L. C. Payne's new Hardware store at Lisbon, N. H., is nearing completion and will be ready for occupancy September 15.

That the Hardware jobbing firm of Haynes, Pillsbury & Co., Bangor, Maine, has been dissolved. J. W. Haynes retires and Fred. H. Pillsbury will continue the business.

That Henry E. Retallich has bought the interest of L. A. Garrett in the Hardware firm of L. A. Garrett & Co., West Troy, N. Y.

That E. T. Gilzer and John L. Hacker of Charleston, S. C., will open a Hardware store at Bartow, Fla., about September 1.

That the Drew Hardware Company, Jacksonville, Fla., have become the Florida Hardware Company. The management of the business is vested in the same officers as heretofore.

That the Hardware establishments of P. Twogood & Son and Mœller & Detleff, Grand Mound, Iowa, were destroyed by fire on the 25th ult.

That the store of J. W. Stage, Albert Lee, Minn., was robbed on the 24th ult., a large amount of Cutlery and other goods being taken.

That Stewart & Motsinger are the conductors of a new Hardware store at Shoals, Ind.

That H. Fredericks, Sheboygan, Wis., expects to commence the Hardware business at that point.

That T. J. Wells, Waverly, Kan., is a new Hardwareman at that place.

That W. A. and J. L. Williams are opening a new Hardware store at Logan, Iowa.

That L. C. Payne's Hardware business at Lisbon, N. H., will soon be settled in his new store, which is rapidly approaching completion

That Elliott, Bensen & Co., have commenced the Hardware business at Minneapolis, Minn.

That M. K. Upshaw and Samuel A. Cherry are opening up a stock of Hard-

ware in the building formerly occupied by Brady Bros., Gainesville, Texas.

That J. J. Kelley, Preston, Minn., contemplates embarking in the Hardware business at Rochester, in that State.

That Evans & Kelley have bought the Hardware stock of Withey & Delaney, Savannah, N. Y.

That the walls of the Hardware store of J. E. & W. H. Hudson at Maryville, Mo., fell in on the 25th ult., burying the stock in the ruins. The loss will reach $10,000. No lives were lost.

That Snelling & Maher, Orting, Wash., have sold out their stock to Livesey & Son of North Yakima, Wash., and will leave this fall for that point, where they will again engage in the Hardware business.

That the Hardware store of J. F. Seas & Sons, Oroville, Ohio, was burglarized on the 21st ult.

That Dawson & Wonder have purchased the Hardware business formerly conducted by Winter Bros. at Ogden, Iowa.

The Leigh & Cramer are a new Hardware firm at Hardy, Neb.

That Wm. Fuller and Wm. Everson have opened a Hardware store at Union City, Pa.

That E. B. Connelly and J. B. Sheridan of Columbus, Ohio, will open a wholesale and retail Hardware store at Piqua, Ohio.

That H. A. Wollcoot has recently commenced the Hardware and Stove business at Carthage, Mo.

That Lang & Co., Hillsboro, Texas, were burned out on the 20th ult., and lost about $700 worth of Hardware.

That William Swanson has bought a half interest in a Hardware store at Hamilton, Ont.

That Johnson Bros. will soon engage in the Hardware business at Grinnell, Iowa.

That Love & Roy Hardware Company, Russellville, Ark., are erecting a two-story structure for their business.

That Kreig & Suffiger are a new Hardware firm at Edwardsville, Ill.

That the Hardware and Implement stock of W. S. Green, Santa Rosa, Cal., has been purchased by M. Prince.

That C. M. Loomis has recently entered the Hardware business at Lincoln, Neb.

That B. W. Hardy has broken ground for his new Hardware store at Hampden, Maine.

That Geo. H. Englehart is the proprietor of a new Hardware store at Collamer, Ohio.

That James Clark has opened a new Hardware store at Clinton, N. Y.

Trade Topics.

Electrical Goods.—It is evident that the Hardware trade are giving increased attention to Electrical Goods. On this point we have the following advices from an Illinois correspondent:

Electrical Goods we think have come to stay and the trade grows very rapidly. It belongs to the Hardware dealer, and he should try to catch on before some other line of business takes it up. Our greatest trouble is with the Electrical supply houses in this city, who sell to the consumers at dealers' prices, but they have had to go to the consumer largely for their trade. This will, however, right itself as soon as the majority of the trade carry stocks.

The question is also discussed in the following terms by a well-known house in Western New York:

As to whether Electrical Goods can be advantageously carried by Hardwaremen: We think a line of house goods should be found in every Hardware store, the variety depending upon the needs of the community. We, for instance, handle and introduce these goods. Directly we are confronted with a competition and loss of trade that is very annoying as well as demoralizing. In neighboring cities are retail houses who do a jobbing business and have one or possibly two men on the road. In case only one man, he, as a rule, does not call on the trade, but goes to the carpenter shop, lumber yard and wherever he sees a new house going up and sells the owner or builder, or lumberman, or all of them, Building Paper, Hardware, Paint and a single tool to a workman if in need, and possibly an Electric Bell outfit for the house. In any event, he induces the builder to put in his office as stock half a dozen sets or a little assortment at wholesale prices, he (the carpenter) selling them without regard to regular profit, probably no two of them alike. In case two men are sent out one calls on the trade and the other on the consumer, often extending credit to parties from whom we could not collect. We have had our market filled up with Electric and other goods in this way and have seen profits and trade along certain lines dwindle away to a point where they could not be discovered. If we discuss the causes that lead up to and produce this condition we shall get too far away from the subject, and as this letter is now too long we close with the statement that it takes a live man to keep up with the procession in the present condition of trade.

It is also touched upon by a correspondent in Indiana in the following terms:

We handled Bicycles, Tricycles and Electrical Goods for the past four years with good results. The above line of specialties work very well with Hardware and House Furnishing line. They all yield good profits, particularly the latter. We frequently make more margin on a $15 Electric Bell outfit for a house than we do on a $75 line of Nails, Glass, Sash and Doors for same house. A man of fair judgment can soon learn to put up Bells and appliances to good advantage. We are pleased to learn that you intend to give the above lines some attention through the columns of your worthy paper and trust we may all profit thereby.

A correspondent thoroughly familiar with the matter refers in the following terms to the position of Electrical Goods in Hardware:

With few exceptions the Hardware dealers and jobbers have heretofore been so backward in taking hold of Electrical Goods that manufacturers have been obliged to seek a market among contractors and small trade in order to establish a demand. The immediate effect is that the Hardware dealer coming in now as a middleman finds that he will have to sell close in some cases for a time, his only protection in such cases practically being in buying quantities, and also the advantage of freight shipments instead of express. This disadvantage to Hardware dealers, however, is adjusting itself rapidly wherever manufacturers find a market with the dealer.

Business Rules.—The following business rules have been adopted by the George Worthington Company, the W. Bingham Company, Lockwood-Taylor Hardware Company and the McIntosh-Huntington Company, Cleveland, Ohio:

1. Goods sent according to order must not be returned without our consent.

2. Any claim for damage to goods received while in transit must be made upon the transportation company and not upon the shipper. Our responsibility ceases when the goods are delivered to the transportation company.

3. Traveling salesmen may investigate and report upon claims against the house, but are not authorized to make any settlement without special instructions.

4. No contract for the purchase or sale of goods can be canceled without the consent of both parties.

5. Warranted goods must be returned at the expense of the owner, and are exchangeable for others of the same kind, or may be credited at the market value when returned.

6. All orders and other business letters requiring the attention of the house must be addressed to the firm and not to an employee.

Copies of these rules are sent out to their customers with the intimation that they will be strictly adhered to.

Exports.

PER BARK AUGUST BURCHARD, AUGUST 27, 1891, FOR DUNEDIN, NEW ZEALAND.

By W. H. Crossman & Bro.—6 dozen Vises.
By W. K. Freeman.—76 pounds Hardware, 288 pounds Scales, 4500 pounds Horse Nails.
By The F. B. Wheeler Company.—1 case Hardware.
By R. W. Forbes & Son.—10 dozen Rakes, 10 gross Hardware.
By S. Hoffnung & Co.—2 cases and 1 box Strops.
By Henry W. Peabody & Co.—10 cases Horse Nails, 3 packages Farming Implements.
By A. Field & Co.—9 cases Nails.

FOR LYTTLETON.

By Henry W. Peabody & Co.—15 cases Horse Nails.
By R. W. Forbes & Son.—6 Store Trucks, 3 cases Pumps, 3½ dozen Wringers, 8 cases Horse Nails, 13 cases Axes, 5 cases Horse Nails, 2 cases Carriage Bolts, 28 packages Hardware.

FOR DUNEDIN AND LYTTLETON.

By Arkell & Douglas.—7 cases Horse Nails, 1 case Shovels, 4 cases Guns and Cartridges, 9 crates Stoves, 2 cases Bolts, 6 cases Scales, 30 cases Hardware, 6 racks Churns, 14 cases Tools.
By R. W. Cameron & Co.—68 packages Harvesting Machinery, 6 kegs Nails, 1 case Hardware, 3 hogsheads Pumps, 2 boxes Cages, ½ dozen Wringers, 1 package Meat Choppers, 9 Wringers, 3 dozen Hatchets, 2 dozen Lamps.
By Arkell & Douglas.—325 packages Agricultural Implements.

PER SHIP SOUTHERN CROSS, AUGUST 29, 1891, FOR SYDNEY, N. S. W. (CONCLUDED.)

By R. W. Forbes & Son.—2 cases Shells and Cartridges, 4 cases Fire Arms, 12 dozen Wrenches, 6 boxes Plows, 6 Lawn Mowers, 850 pounds Nails and Tacks, 19 packages Lampware, 67 dozen Axes, 26 packages Hardware.
By W. H. Crossman & Bro.—84 dozen Axes, 14 Forges, 1 case Hardware, 5 Hay Rakes, 300 Brass Shells, 93 Corn Shellers, 6 dozen Lamps, 123 pounds Stone, 7 cases Hardware, 3 gross Lemon Squeezers, 36 sets Reloading Tools, 10,000 Cartridges, 1 case Pump Parts, 64 dozen Axes, 6 pairs Springs, 6 Revolvers, 6 Rifles, 20 cases and 2 packages Hardware, 88 dozen Axes, 1 dozen Churns, 8 packages Hardware, ½ dozen Rifles, 64 dozen Axes, 3 boxes Hardware, 1 cask Lamp Goods, 1 case Razor Strops, 7 dozen Razor Strops, 5 packages and 5 cases Hardware.

PER SHIP STRATHGRYFE, AUGUST 31, 1891, FOR MELBOURNE, AUSTRALIA.

By Strong & Trowbridge.—17 dozen Hardware, 123 pounds Hardware, 9 cases and 50 kegs Nails, 101 dozen Lamp Goods, 15 dozen Hammers, 1 case Tools, 4 dozen Lamp Ware, 2½ dozen Braces, 2 dozen Weeders, 24 dozen Traps, 6 dozen Locks, 21 Emery Wheels, 160 pounds Stone, 13,300 Bolts, 6 Boring Machines, 2 dozen Choppers, 1½ dozen Wringers, 2 dozen Braces, 2 dozen Drawing Knives, 1 case Hardware.
By R. W. Forbes & Son.—10 packages Carriage Hardware, 84 dozen Tools, 8 cases Stamped Ware, 11 cases Lamp Ware, 3 packages Household Goods, 18 packages Hardware, 20 kegs Nails, 5 cases Fire Arms and Tools, 5000 Cartridges, 15 packages Hardware, 3 cases Lamp Ware, 1 box Wire Cloth.

By R. H Dana & Co.—8 cases Axes, 2 cases Meat Cutters, 4 cases Bird Cages, 1 case Tacks, 2 cases Hardware, 17 kegs Nails, 1 case Rat Traps, 12 cases Wringers, 1 case Flint Paper, 1 case Saws, 2 cases Files, 4 cases Butts, 8 cases Bolts, 50 kegs Nails, 1 case Rakes, 22 cases Hardware, 6 cases Scythes, 2 cases Hardware, 2 cases Wood Saws, 30 cases Axes, 1 case Saws.

By W. E. Peck.—1 case Hardware, 6 cases Agricultural Implements, 4 cases Saddlery Hardware, 1 barrel Hardware, 20 dozen Hammers, 30 reams Sandpaper, 300 pounds Nails, 5 cases Hardware.

By Edward Miller & Co.—39 packages Lamp Goods.

By W. K. Freeman.—12 Rifles, 156,000 Shells, 142,000 Cartridges, 27 cases Cartridges and Primers.

By R. H. Dana & Co.—1 case Lamps.

By Simpson, Hall, Miller & Co.—9 cases Plated Ware.

By Wm. C. Barker Company.—3 packages Agricultural Implements.

By W. J. Kingsland.—8 cases Nails.

By Hammacher & Delius.—5 dozen Axes, 10 packages Hardware, 12 kegs Nails, 6 dozen Traps.

By Wm. C. Barker Company.—1 package Hardware.

By Plumb, Burdict & Barnard.—9 cases Bolts.

By W. K. Freeman.—20 cases Hardware.

By the F. B. Wheeler Company.—4 cases Hardware, 3 cases Lamp Goods.

By McLean Bros. & Rigg.—4 cases Parers, 4 cases Carpet Sweepers.

By Coombs, Crosby & Eddy.—4 dozen Bench Screws, 6 dozen Spades, 500 Bolts, 2 dozen Clamps.

By Alfred Field & Co.—1 case Nails, 5 cases Bolts.

By Healy & Earl.—1 hogshead Pumps, 3 cases Pumps.

By Wm. E. Peck.—8 cases Hardware and Tools, 10 dozen Hatchets, 11 cases Hardware, 1 case Saw Sets and Bench Stops, 1 case Hardware, 4 packages Plated Ware, 12 cases Hardware.

By R. W. Cameron & Co.—8 boxes Meat Choppers, 5 boxes Hardware, 55 packages Agricultural Machinery, 1 box Hardware.

By H. W. Peabody & Co.—20 cases Edge Tools, 1 case Rubber Packing, 2 cases Silver Ware, 3 cases Hardware, 1 case Revolvers, 2 cases Hardware, 5 packages Emery Wheel, 2 barrels Lamp Ware.

By W. H. Crossman & Bro.—6 dozen Wringers, 100 pounds Stone, 12 crates Stoves, 21 packages Hardware, 2 cases Traps, 1 case Stone, 1 case Picture Cord, 2 cases Nails, 10 cases Iron Bolts, 13 cases Hardware, 1 case Primers, 1 case Traps, 1 case Hardware, 1 case Thermometers, 6 Hose Trucks, 6 dozen Scales, 5 cases Broilers, 1 case Bolts, 1 case Air Rifles, 20 packages and 27 cases Hardware, 1 case Hardware, 1 dozen Saws, 1 dozen Jacks, 7 dozen Meat Choppers, 4 packages Lampware, 3 dozen Agricultural Implements, 16 cases Hardware, 2 cases Agricultural Implements, 3 packages Plated Ware, 150 pounds Oil Stoves, 3 dozen Carpet Sweepers, 24 dozen Picture Cord, 1 dozen Axes, 5 cases Hardware, 1 dozen Parers, 1 dozen Axes, 31 dozen Carpenters' Tools, 5000 Cartridges, 3 cases Hardware, 3 cases Lamp Goods, 7 cases Hardware.

By H. W. Peabody & Co.—3 cases Hardware, 18 kegs Nails, 2 dozen Tools, 1 case Stones, 2 cases Sand Paper.

PER BARK STANLEY, SEPTEMBER 2, 1891, FOR PORT ELIZABETH, SOUTH AFRICA.

By Winchester Repeating Arms Company.—30,000 Cartridges.

By Arkell & Douglas.—25 Corn Shellers, 2 cases Fuse, 4 cases Guns, 51 cases Cartridges, 53 packages Manila Rope, 10 cases Nails, 87 Scales, 124 cases Axes and Hatchets, 229 kegs Nails, 15 dozen Choppers, &c., 172 dozen Hardware, 3 dozen Lamp Ware, 87 packages Agricultural Implements.

PER BARK FLORENCE B. EDGETT, SEPTEMBER 2, 1891, FOR PORT ELIZABETH, SOUTH AFRICA.

By Coombs, Crosby & Eddy.—14 cases Meat Choppers, 4 racks Shellers, 4 cases Axes, 9 cases Plows, 3 racks Shellers, 4 packages Carriage Hardware.

By Alfred Field & Co.—1 case Cartridges, 40 kegs Nails, 4 cases Scales, 4 crates Hardware, 10 packages Scales, 1 rack Churns.

By Corner Bros. & Co.—12 cases Agricultural Implements, 80 cases Tools.

By John Norton's Son.—75 cases Agricultural Implements, 14 dozen Bird Cages.

By W. H. Crossman & Bro.—3 cases Churns, 5 cases Hardware, 20 kegs Nails, 5 cases Carpenters' Hardware, 2 cases Hardware, 6 cases Powder Fuses, 21 packages Hardware, 6 dozen Parers, 11 cases Agricultural Implements, 4 dozen Hardware, 4 bundles Ladders, 10 dozen Scales, 146 dozen Hardware, 90 kegs Nails, 40 cases Sisal Rope, ½ dozen Churns, 8 cases Hardware, 1 bundle Sash Cord, 8 cases Sash Weights, 20 cases Hardware.

By John Norton's Son.—1 case Cutlery.

By William E. Peck.—5 Stoves, 3 packages Lamp Ware, 1 dozen Meat Choppers.

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

In this branch of trade nothing outside of the routine experience is to go on record for the week under review. As regards base materials and their effect upon the various pigments, about all that can be said is that what little change has taken place is in the direction of higher cost. This applies particularly to Pig Lead, the market for which has hardened, as not unusual at this season of the year; but oil and other commodities are holding remarkably steady, in a manner indicating that a little more activity in the demand for the various preparations would bring into bold relief the inherent strength of the general situation. As it is, the movement into channels of consumption drags somewhat, and where competition is unrestrained careful buyers secure special favors from jobbers if not from manufacturers.

White Lead.—For pure pigment there has been a seasonably good demand. Rainy weather in this quarter and vicinity has checked the spread of Paint on outside work, but jobbers have distributed considerable quantities of both corroders' product and some of the better class of mixtures, while manufacturers note the receipt of very fair orders also. This favorable experience, in the face of untoward weather conditions, is gratifying all around, and, in connection with the upward tendency of prices of Pig Lead, gives the market what looks like firmness of an enduring character. Jobbers still sell at rates somewhat at variance with those laid out by manufacturers, but favors are not given as promiscuously as they were a month ago, and the market, as a whole, is firmer, without quotable change in prices.

Zincs.—Domestic Oxide is selling at the prices that have ruled for some time past. The movement is not particularly brisk at present, and stocks accumulate to some extent at first hands, but manufacturers work together harmoniously, and in the absence of friction the market retains a fairly firm tone. Imported Zincs are steady at former prices also, although the movement latterly has not been sufficient to absorb the entire receipts. The foreign markets are represented as being in fairly strong position.

Colors.—On the market for dry Colors there is nothing to note that differs materially from what has been incorporated in summaries of the situation given for several weeks past. Uncertainty regarding the condition of the market for Quicksilver arouses some curiosity as to the future of Quicksilver Vermilion, but manufacturers remain quiescent and adhere to old rates for the strictly pure article. Nothing has occurred to cause a ripple upon the surface of the market for other house painters' specialties and grinders' stock is wholly unchanged. Paris Green and other insecticides remain positively dull. Oil Colors are moving in the routine manner, as are also Ready-Mixed Paints, and remain without radical change as to prices.

Miscellaneous.—Cargo lots of Block Chalk, to arrive, are quoted at $2, and some business is said to have been effected at that rate. The jobbing price is unchanged. Orders for Whiting keep up fairly well, and prices remain steady. Prices for Barytes are rather weak under the influence of somewhat increased pressure to sell. China Clay is also rather weak under free arrivals, and other than finest grades of Talc incline in buyers' favor. Terra Alba moves off slowly at old prices.

Oils and Turpentine.

Changes in this line have been few and comparatively unimportant. The outlook is free from really new conditions that would stimulate action on the part of buyers or sellers, and operations nearly all along the line are governed accordingly. More or less interest centers upon negotiations pending between the fishermen and buyers of Crude Menhaden Oil, and around the outlook for new crop Cotton Seed Oils, while Lard Oil is closely watched. However, operations are on strictly conservative lines and hardly as broad as might be expected at this season. With some few minor exceptions the tendency of prices has been toward a somewhat higher range, and the general market shows a fairly strong undertone.

Linseed Oil.—City brands are without change in value and crushers advise that sales are well up to a full average for the season. Western product is generally quoted at 40¢ upward, and local sales agents assert that the amount of stock offering in this quarter is really insignificant. It is an open secret, however, that the price named is shaded at second hands, and rumor goes so far as to make it appear that bids of 39¢ for carload lots would be accepted. Cost of seed has reacted somewhat from the late advance and the indications are that the raw material will be cheaper rather than dearer in the immediate future. This outlook has the effect of changing the opinion of some timid persons who last week seemed to think that the worst was over, but at present there are really no reasons for apprehension.

Cotton Seed Oil.—Contracts have been made for several hundred barrels new crop prime quality Crude at 30¢, November delivery, but buyers are still very cautious in the matter of engagements, despite the smallness of existing stocks of old crop. One of the large concerns has closed out about 4000 barrels "off" grade refined, which will be shipped to Europe, chiefly on the parity of 33¢ @ 34¢ here. A fair sized block of prime Summer Yellow went at 39¢, which price fairly reflects present market value of a first-class article.

Fish Oils.—There has been considerable negotiation between the Menhaden Oil combine on supplies for near future delivery to the home trade. Buyers expressed a willingness to pay 30¢ for Prime Light Oil, but sellers want 30¢ for average quality exclusively. This difference proved to be sufficient to keep business in abeyance, momentarily at least. In the New Bedford market there have been sales of about 600 barrels crude Sperm, a similar quantity of Sea Elephant and 250 barrels Southern Whale. The prices are not divulged. Pressed and bleached products are selling very fairly at old prices, chiefly in a jobbing way.

Miscellaneous.—Olive Oil in barrels is now quite firm at 62¢, upward, quality of stock and size of order. Cocoanut Oil has continued slow all through the week, with very little change in prices. Palm and Red Oils are firm at old prices, chiefly for immediate delivery.

Spirits Turpentine.—Prices have been gradually hardening in this market, under the influence of advices of a rising tendency at the South, but dealings have fallen off somewhat, and the demand at present is hesitant. Latest sales were at 37½¢ for regular, and 38¢ for machine made barrels.

The Bolding Poke Yoke.

The Bolding Poke Yoke Mfg. Company, Sumner, Ills., are offering the trade a poke yoke, as illustrated herewith. It is referred to as combining perfection and durability with cheapness. The yoke is made of selected material; the stickers are worked independent of the bow, which arrangement, it is stated, saves the bow from being broken. Safety pins are used on all the yokes. The claim is made that these yokes have turned stock where all other yokes have failed.

The Bolding Poke Yoke.

F. & H. Flexible Back Split Die.

Peter A. Frasse & Co., 95 Fulton street, New York, are introducing flexible back split dies in sets, as illustrated in Fig. 1. The dies are ⅝ inch in diameter, being a steel disk provided with a rim of soft iron which readily bends enough to allow of any adjustment. The combination of iron and steel prevents the liability of the die to check in the thinner parts forming the rim in the process of manufacture, and the consequent breaking when an adjustment of the die is attempted in use. One of these dies has been closed completely and opened 12 times. Each set is put up in a neat polished wooden box, and consists of a tap wrench, drop forged die holder and one tap and die each of the various sizes. A detailed illustration of the tap wrench is given in Fig. 2, with holes to receive the different sized taps. These are now made in four sets, known as A, B, C and D, and contain respectively five, six, eight and ten taps and dies each. The set D, which is the largest, cuts up to ½ inch. The threads cut are standard machine screw sizes, and each set is warranted. They are adapted for the use of machinists, electricians, amateurs, or for any kind of light work.

Fig. 1.—F. & H. Flexible Back Split Die.

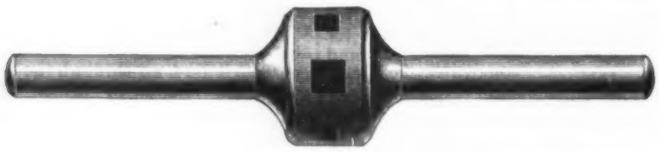


Fig. 2.—F. & H. Tap Wrench.

The Paradise Combined Window Sash Pivot and Check.

Parrent & Co., Memphis, Tenn., are offering the trade a combined window sash pivot and check, as illustrated herewith. This consists of two plates, as shown in Figs. 3 and 4, to be used only upon the bottom of the sash, as illustrated in Fig. 1, any sash pivot being used at the top of the sash. The bottom plate, Fig. 4, which is to be fastened to the window sill, has a pintle in the center and a vertical notched flange around its outer edge. The top plate, Fig. 3, is to be fastened to the bottom of the sash and is provided with a hole for the pintle and a vertical flange around the outer edge to catch over the edges of the bottom plate The top plate, Fig. 3, has an automatic catch, which engages with the notches in the flange of the bottom plate. This catch is not clearly shown in Fig. 3, but may be seen in Fig. 2, which shows the two plates closed as they appear when in use. It will be noticed that the cut of the top plate is reversed in Fig. 3 to show its interior construction. This device is designed for use on windows swinging horizontally; and it is claimed will hold the window at any angle; and when closed is a perfect burglar-proof sash lock. The point is made that by the use of the window pivot and check upon large windows in churches, public buildings, factories, &c., a large saving is made, as box frames, sash weights, sash pulleys, cord, sash lock and sash lifts are entirely done away with. The window pivot and check are made in two sizes. No. 1 is designed for windows up to 1¾ inches, and the No. 2 for windows that are 2 inches

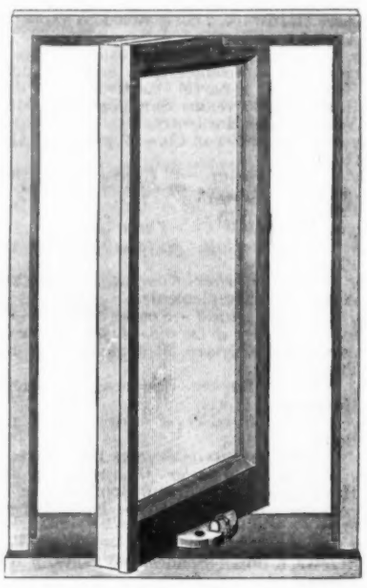


Fig. 1.—Combined Window Sash Pivot and Check.

Fig. 2.—Pivot Closed.

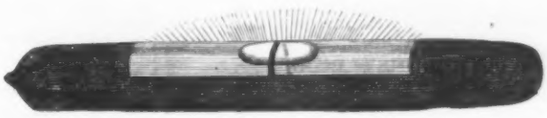
Fig. 3.—Top Plate with Catch.

Fig. 4.—Bottom Plate.

thick and over. They are made in malleable iron, coppered iron and genuine bronze; the latter for stained glass windows.

Cook's Luminous Level Tube.

The Luminous Level Company, 82 Sixth avenue, New York, are introducing a luminous level tube, as illustrated herewith. The tube is of the usual form, standard sizes, and to be set in a level in the ordinary manner, and is provided with a luminous compound. The compound is applied a separate strip, this strip being secured

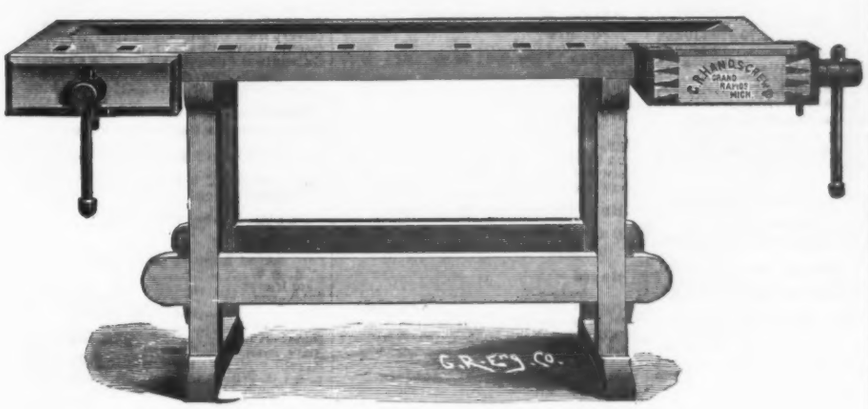


Cook's Luminous Level Tube.

to the bottom or back of the tube by a wrapper of the form shown in the cut. The wrapper is treated to withstand moisture and so secured as to exclude dust from the luminous surface. The bubble is visible from the side or top, as usual, and a non-luminous center is produced, which is, of course, additional to the center lines found on the brass plate of levels. The luminous tube is designed especially for the use of carpenters, plumbers and other workmen when leveling in dark rooms, closets, &c., its use avoiding the necessity of striking matches or using other light. It is, however, equally serviceable for use on any work where a level is required. The tubes being of standard size require no more labor or experience to set them than an ordinary tube.

Cabinet Makers' Bench.

Grand Rapids Hand Screw Company, Grand Rapids, Mich., are offering the trade a cabinet makers' bench, as illustrated herewith. The bench has a hard maple top as thick as can be obtained from 3-inch stock. The legs are also of maple 2½ x 3½ inches. The size of their regular



Cabinet Makers' Bench.

bench, such as is carried in stock, is 25 inches wide (with 13-inch maple top), 6½ feet long and 34 inches high. Special sizes will be made, or the Massey Lightning Grip vises will be fitted when desired. The bench is referred to as being made according to ideas presented by the furniture manufacturers of Grand Rapids.

Taws & Hartman of Philadelphia, the well-known engineers and contractors, have recently published a little pamphlet entitled "Names and Terms of the Blast Furnace."

Discriminating Against Seaboard Cities.

The discrimination in freight rates alleged by the New York Board of Trade and other commercial bodies of certain railroads against New York in favor of interior cities, in violation, as is asserted, of the Interstate Commerce law, will very likely soon receive the attention of the Federal courts in a suit that it is expected will be brought for that purpose at the instance of the New York Board of Trade and Transportation. The question was thus explained by John D. Kernan, who will represent the Board of Trade:

"We are advised," he said, "that certain railroads are disobeying the order of the Interstate Commissioners, forbidding them to make rates that discriminated against the seaboard cities. Those railroads claim that the Interstate Commissioners exceeded their authority in making the order, and that even if they had the authority to do so they have construed the Interstate Commerce law wrongly as applicable to the facts of the case. These railroads also claim that under the provisions of the Interstate Commerce law they are justified in making the through rates which are complained of, contrary to the holding of the commission. They only way to determine this question and enforce the order of the Interstate Commerce Commission is to bring a suit in the United States Court against some, or all, of the offending railroads, charging them with violating the Interstate Commerce law, and asking that they be enjoined from further doing so, and that they be required to obey the mandate of the Interstate Commission.

"Some of the railroad companies profess to be willing to facilitate the presentation of the question in order that it may be determined whether they are justified in refusing to obey the order of the Interstate Commerce Commissioners. The Board of Trade and Transportation has not yet authorized me to begin the suit. When the secretary of the Board of Trade had his attention called to the facts of the case he took prompt steps to have the board determine whether such an action should be brought as I have indicated for the purpose of having the question, which the Interstate Commerce Commission had decided in its favor and against the railroads some time ago, judicially determined by the Federal courts. I am not yet advised what determination the Board of Trade has or will come to in the matter. It is at present, however, in the hands of the board. If it determines that a suit shall be brought no time will be lost by me in carrying the resolution into effect." Mr. Kernan, in conclusion, declared that this question was one of the utmost importance to the seaboard cities. If such discrimination in freight rates is permitted on imports, he said, the same discrimination will no doubt be made on export freight rates, only with more disastrous results to the manufacturing interests of seaboard cities.

In all parts of the South farmers are reported as less in debt than for years, due in part to enforced economy on account of the monetary stringency since last fall. The low price of cotton in the spring caused the planters to pay more attention to raising their own food supplies, and the South will probably be less dependent upon other sections for corn and wheat than ever before. It is estimated that the grain crops of the South this year will aggregate nearly 100,000,000 bushels more than in 1890, and this, it is believed, will fully offset the low price of cotton.

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CURRENT HARDWARE PRICES.

SEPTEMBER 9, 1891.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' Prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

Adjusters, Blind.
Domestic.....₩ doz $3.00, 33⅓%
Excelsior.....₩ doz $10.00.....50&10&2%
Washburn's Self-Locking.....20&20&10%

Ammunition—See Caps, Cartridges, Shells, &c.

Anvils.—
Eagle Anvils, ₩ ℔ 10¢.....15@15&5%
Peter Wright's.....11@11½¢
Armitage's Mouse Hole.....10½@11¢
Armitage's Mouse Hole, Extra...12@12½¢
Trenton.....10@10½¢
Wilkinson's.....10½@11¢
Moore & Barnes Mfg. Co.....33⅓%

Anvil Vise and Drill—
Millers Falls Co., $18.00.....20%
Cheney Anvil and Vise.....25%
Allen Anvil and Vise, $8.00.....40&10%
Star.....45&5%

Apple Parers—See Parers. Apple, &c.

Augers and Bits—
Douglass Mfg. Co.
Wm. A. Ives & Co.
Humphreysville Mfg. Co.
French, Swift & Co. (F. H. Beecher, P. S. & W. Co
Rockford Bit Company
} 70&10&70 &10&5%
Cook's, Douglass Mfg. Co.....55%
Cook's, N. H. Copper Co.50&10&50&10&5%
Ives' Circular Lip.....60%
Patent Solid Head.....30%
C. E. Jenning & Co., No. 10, extension lip.....40%
C. E. Jennings & Co., No. 30.....60%
C. E. Jennings & Co., Auger Bits, ₩ set, 32⅛ quarters, No. 5, $5; No. 30, $3.50.20%
Lewis' Patent Single Twist.....45%
Russell Jennings' Augers and Bits.25&10%
Imitation Jennings' Bits.....60&60&5%
Snell's Jennings Pattern.....60%
Pugh's Black.....20%
Rockford, Jenning's Pattern.....60%
Car Bits.....60@60&10%
Car Bits, P. S. & W. Co.....60&10%
Snell's Car Bits.....60%
L Hommodieu Car Bits.....15&10%
Forstner Pat, Auger Bits.....20%
Cincinnati Bell-Hangers' Bits....30&10%

Bit Stock Drills—
Morse Twist Drills.....50&10&5%
Standard.....50&10&5%
Cleveland.....50&10&5%
Syracuse, for metal.....50&10%
Syracuse, for wood (wood list).30@30&5%
Williams' or Holt's, for metal.50&10&10%
Williams' or Holt's, for wood...40&10%
Cincinnati, for wood.....30&10%
Cincinnati, for metal.....45&10%

Expansive Bits—
Clarks' small, $18; large, $26..35@35&10%
Ives' No. 4, ₩ doz $60.....40%
Swan's.....40%
Steer's, No. 1, $26; No. 2, $22.....35%
Stearns' No. 2, $48.....20%

Gimlet Bits—
Common.....₩ gross $2.75@$3.25
Diamond.....₩ doz $1.10.....25&10%
Bee.....25@25&5%
Double Cut, Shearston's.....45@45&10%
Double Cut, Ct. Valley Mfg. Co....30&10%
Double Cut, Hartwell's, ₩ gro.....$5.25
Double Cut, Douglass'.....40&10%
Double Cut, Ives'.....60@60&10%

Hollow Augers—
Ives
French, Swift & Co.
Douglass'
} 33⅓@ 33⅓&10%
Bonney's Adjustable, ₩ doz $48....40&10%
Stearns'.....20&10%
Ives' Expansive, each $4.50.....50&5%
Universal Expansive, each $4.50.....20%
Wood's.....25@25&10%
Cincinnati Adjustable.....25&10%
Cincinnati Standard.....25&10%

Ship Augers and Bits—
L'Hommedieu's.....15&10@15&10&5%
Watrous'.....15&10@15&10&10%
Snell's.....15&10@15&10&5%
Snell's Ship Auger Patt'n Car Bits, 15&10@15&10@5%

Awl Hafts—See Hafts, Awl.

Awls, Brad Sets, &c—
Awls, Sewing, Common ₩ gr $1.70, 45%
Awls, Should. Peg, ₩ gr $2.45, 50@50&10%
Awls, Pat. Peg...₩ gr 63¢.....50@50&10%
Awls, Shouldered Brad..2.70 ₩ gr.....35%
Awls, Handled Brad...$7.50 ₩ gr.....45%
Awls, Handled Scratch ₩ gr, $7.50.35&10%
Awls, Socket Scratch, ₩ doz, $1.50.25@30%

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

	Plain.	Beveled.
First quality, best brands	$7.00 @	$7.50
First qual., other brands	6.62½ @ 6.75	
Second quality	6.00	6.50

Axle Grease—See Grease, Axle.

Axles—
No. 1.4½¢@5¢, No. 2 5½¢@6½¢
Nos. 7 to 14.....55&5%
Nos. 15 to 18.....47½%
Nos. 19 to 22.....70%
} 3% cash
Concord Axles, loose collar.....5¢@6¢
Concord Axles, solid collar.....6¢@7¢
National Tubular Self-Oiling.....33⅓@33⅓&5%

Bag Holders.—See Holders, Bag.

Balances—
Spring Balances.....40%

	No. 2000	20	30
Chatillon, ₩ doz	$0.80	0.95	1.75 net

Chatillon Straight Balances.....40%
Chatillon Circular Balances.....50&10%

Barb Wire.—See Wire, Barb.

Bars,
Crow—
Cast Steel.....₩ ℔ 3½¢
Iron, Steel Points.....₩ ℔ 3¢

Basins, Wash—
Standard Fiberware, No. 1, 10½-inch, $2; 12-inch, $2.25; 13½-inch, $2.75; 15-inch, $3.25.

Beams, Scale—
Scale Beams, List Jan. 12, '82...50&10@50&10&5%
Chatillon's No. 1.....40%
Chatillon's No. 2.....50%
Custer's.....33⅓%

Beaters—
Egg—
Dover.....₩ doz $1.50
Duplex (Standard Co.).....₩ doz $1.25
Rival (Standard Co.).....₩ doz $1.00
Duplex Extra Heavy (Standard Co.)....₩ doz $3.50
Bryant's.....₩ gro $14.00
Double (H. & R. Mfg. Co.), ₩ gro. No. 0, $12.00; No. 1, $15.00; No. 2.....$36.00
Easy (H. & R. Mfg. Co.).....₩ gro $12.00
Triple (H. & R. Mfg. Co.).....₩ gro $16.50
Spiral.....₩ gro $4.25 @ 4.50
Improved Acme (H. & R. Mfg. Co.).....₩ gro $9.00
Paine, Diehl & Co.'s.....₩ gro $24.00
Silver & Co.....₩ doz $5.50
Culinary—
Keystone, P.D.&C., Each, No. 1, $1; No. 2, $2.....20 %

Bells—
Cow—
Common Wrought.....60&10%
Western.....20&10%
Western, Sargent's list.....70&10%
Kentucky, "Star".....20&10%
Kentucky, Sargent's list.....70&10%
Kentucky Durham.....70&10
Dodge, Genuine Kentucky....70@70&10%
Texas Star.....50&10@50&10&5%
Door—
Gong, Abbe's.....33⅓&10%
Gong, Yankee.....45&10%
Gong, Barton's.....40&10@50%
Crank, Taylor's.....25&10%
Crank Brooks'.....50&10&2%
Crank Cone's.....10%
Crank, Connel's.....20&10%
Lever, Sargent's.....60&10%
Lever, Taylor's Japanned.....25&10%
Lever, R. E. M. Co.'s.....50&10&2%
Pull, Brook's.....50&10&2%
Pull, Western.....25&10%
Electric,
Wollensak's.....20%
Bigelow & Dowse.....20%
Taylor's.....20%
Hand—
Light Brass.....75&10%
Extra Heavy.....65&10%
White Metal.....60&10&10%
Silver Chime.....33⅓&10%
Globe Cone's Patent).....25&10@35%
Miscellaneous—
Call.....40@40&5%
Farm Bells.....₩ ℔ 3¢@3½¢
Steel Alloy Church and School Bells..40%

Bellows—
Blacksmiths'.....60&5@65%
Molders'.....40@40&10%
Hand Bellows.....40&10@50%

Belting, Rubber—
Common Standard.....70@70&10&5%
Standard.....70@70&5%
Extra.....60@60&10%
N.Y.B.&P.Co., Carbon.....60%
N.Y.B.&P.Co., Diamond.....50%
N.Y.B.&P.Co., Para.....40%

Bench Stops—See Stops, Bench.

Benders and Upsetters, Tire.
Stoddard's Lightning Tire Upsetters..15%
Detroit Perfected Tire Bender.....15%

Bits—
Auger, Gimlet, Bit Stock, Drills, &c., see Augers and Bits.
Bit Holders—See Holders.
Blind Adjusters—See Adjusters, Blind.
Blind Fasteners—See Fasteners, Blind.
Blind Staples—See Staples, Blind.

Blocks—
Ordinary Tackle, list May 20, 1889.....70&5@70&10%
Cleveland Block Co., Mal. Iron.....50%
Moore's Novelty, Mal. Iron.....50%
Sure Grip Steel Tackle Blocks.....25%

Boards, Stove.
Wood Lined "Crystal".....50%
"Oxidized".....45%
Embossed.....50%
Paper Lined Zinc.....55%
"Crystal".....55%
Embossed.....55%
"New Tacoma".....55%

Bolts—
Carriage, Machine, &c.—
Com. list June 10, '84.....75&10&2%
Genuine Eagle, list Oct., '84...75&10@80%
Phila. pattern, list Oct. 7, '84..80@80&10%
R.B.&W., old list.....70%
Machine, list Jan. 1, 1890.....75&10@75&10&5%
Bolt Ends, list Jan. 1, 1890.....75&10@75&10&5%
Door and Shutter—
Cast Iron Barrel, Square, &c..70@70&10%
Cast Iron Shutter Bolts.....70@70&10%
Cast Iron Chain (Sargent's list)....65&10%
Ives' Patent Door Bolts.....60%
Wrought Barrel.....70@70&10%
Wrought Square.....70@70&10%
Wr't Shutter, all Iron, Stanley's..60&10%
Wr't Shutter, Brass Knob, " ..40&10%
Wr't Shutter, Sargent's list.....60&10%
Wr't Sunk Flush, Sargent's list...55&10%
Wr't Sunk Flush, Stanley's list...50&10%
Wr't B.K.Flush. Com'n " ....55&10%

Stove and Plow—
Stove.....60%
Plow.....60&5%
R. B. & W., Plow.....55%
Tire—
Common, list Feb. 28, '83.....65%
Port Chester Bolt and Nut Company:
Empire, list Feb 28, '85.....65%
Keystone, Philadel., list Oct, '84....80%
Norway, Phila., list Oct. '84.....75%
American Screw Company:
Norway, Phil., list Oct. 16, '84.....75%
Eagle, Phil., list Oct. 16, '84.....80%
Philadel., list Oct. 16, '84.....80%
Bay State, list Feb. 28, '83.....65%
R.B.&W., Philadel., list Oct. 16, '84.....80%

Borers, Tap.
Common and Rind.....20&10%
Ive's Tap Borers.....33⅓&5%
Enterprise Mfg. Co.....20&10&30%
Clark's.....33⅓&35%

Borax.....₩ ℔ 9½@10½¢

Boring Machines—See Machines, Boring.

Bow Pins—See Pins, Bow.

Boxes, Wagon.
Per ℔.....2¾¢

Braces,—
American Bit Brace Co.:
Nos. 10, 12, 20.....60&10%
Nos. 11, 21, 24, 27.....70&10%
Nos. 22, 23, 25.....60&10&5%
Nos. 13, 26, 36, 37.....70&10&5%
Ball Braces, net.....$1.12 to $1.26
Amidon's
Barker's Imp'd Plain.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet.....75&10@80%
Eclipse Rachet.....60%
Globe Jawed.....40@40&10%
Corner Brace.....40@40&10%
Universal, 8 in., $2.10 10 in.....$2.25
Buffalo Ball.....$1.10@$1.15
Barber's,
Nos. 10 to 16.....50%
Nos. 30 to 33.....50%
Nos. 40 to 63.....50&10%
Saxton's,
Barker's Imp. Polished.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet, Polished.....50&10@60%
Ratchet, Nickeled.....40&10@50%
Buffalo Ball.....net, $1.10@$1.15
Bartholomew's,
Nos. 25, 27 and 30.....50&10@60&5%
Nos. 117, 118, 119.....70@70&5%
Common Ball, American.....$1.00@$1.10
Fray's Genuine Spofford's..50&5@50&10%
Fray's No. 70 to 120, 81 to 123, 307 to 414 50&10%
Ives' New Haven Novelty.....70@70&5%
New Haven Ratchet.....60&5@60&10%
Barber Ratchet.....60&5@60&10%
Barbers.....60&5%
Spofford.....60&5@60&10%
Osgood's Ratchet.....40&10@50%
P. S. & W. Co., Peck's Patent.....60%

Brackets.
Shelf plain, Sargent list, 55&10@55&10&10%
Shelf, fancy, Sargent s list, 60&10@60&10&10%
Reading, plain.....50&10@60&10&5%
Reading, Rosette.....60&10@60&10&10%

Bright Wire Goods—See Wire.

Broilers—

Henis' Self-Basting.	Inch.....	9	10	9x11
	Per doz...	$4.50	5.50	6.50

New Haven.....50%
Wire Goods Co.....65&10%

Buckets, Well.
Galvanized—
Hill's.....₩ doz, 12 qt, $4.25; 14 qt, $5.25
Iron Clad.....₩ doz. 14 qt, $4.25@$4.50
Helwig's Flat Iron Band.....$3.75
Helwig's Wired Top.....₩ doz $4.00

Bull Rings—See Rings, Bull.

Butchers' Cleavers—See Cleavers Butchers'.

Butts—
Brass—
Wrought Brass.....75&10@80%
Cast Brass, Tiebout's'.....50%
Cast Brass, Corbin's, Fast.....33⅓&10%
Cast Brass, Loose Joint.....33⅓&10%
Cast Iron—
Fast Joint, Narrow.....50&10&5@60%
Fast Joint, Broad.....50&10@60%
Loose Joint.
Loose Joint, Japanned.
Loose Joint, Jap. with Acorns.
Parliament Butts.
Mayer's Hinges.
Loose Pin, Acorns.
Loose Pin, Acorns, Japanned.
Loose Pin, Acorns, Japanned, Plated Tips.
} ..70&10 @75%
Wrought Steel—
Fast Joint, Narrow.
Fast Joint, Lt. Narrow.
Fast Joint, Broad.
Loose Joint, Broad.
Table Butts, Back Flaps, &c ....
Inside Blind, Regular.
Inside Blind, Light.
Loose Pin.
} ..70&10 @75%
Bronzed Wrought Butts.....80%

Calipers—See Compasses.

Calks, Toe—
Gautier, One Prong, Blunt.....5½@6¢
Burke's, One Prong, Blunt.....5½@6¢
Burke's, Two Prong, Blunt.....7½@8¢
Burke's, One Prong, Sharp.....6½@7¢

Can Openers—See Openers, Can.

Caps—
Percussion, ₩ 1000—
Hicks & Goldmark's and Union Metallic Cartridge Co.
E. L. Waterproof, 1-10's.....35@37¢
E. B. Trimmed Edge, 1-10's.....47@50¢
E. B. Grnd. Edge, Cent. Fire, 1-10's.....47@50¢
Musket Waterproof, 1-10's.....50@53¢
G. D.....27@30¢
E. B. Genuine Imported.....45¢
Eley's E. B.....56¢ @ 58¢
Eley's D Waterproof, Central Fire...$1.60
Primers—
Berdan Primers, $1.00.....2%
E. L. Caps (for Sturtevant Shells) $1.00, 2%
All other Primers, $1.20.....2%

Cards—List January 28, 1891.
Watson's Cotton, Wool, Horse and File.....25%

Carpet Stretchers—See Stretchers Carpet.

Carpet Sweepers—See Sweepers Carpet.

Cartridges—
Rim Fire Cartridges.....50&5&2 %
Rim Fire Military.....15&2 %
Cent. Fire, Pistol and Rifle.....25&5&2 %
Cent. Fire, Military and Sporting 15&5&2 %
Blank Cartridges, except 22 and 32 cal., additional 10 % on above discounts.
Blank Cartridges, 22 cal., $1.75.....2 %
Blank Cartridges, 32 cal., $3.50.....2 %
Primed Shells and Bullets.....15&5&2 %
E. B. Caps, Round Ball, $1.75.....2 %
E. B. Caps, Con. Ball, Swgd., $2.00.....2%

Casters—
Bed.....
Plate.....
Shallow Socket.....
} Brass....55@55&10%
} Others...60@60&10%
Deep Socket.....40&10%
Yale Casters, list May, 1884...30&10@40%
Yale, Gem.....60@60&5%
Martin's Patent (Phœnix).....45&10@50%
Payson's Anti-friction.....60@60&10%
Giant Truck Casters.....30%
Stationary Truck Casters.....50&10%
Socket Truck Casters.....50%

Cattle Leaders—See Leaders, Cattle.

Cement.
Victor Elastic.....5 ℔ pails ₩ ℔

Chain—
Trace, Wagon and Fancy Chains, List revised April 21, 1890.....60@60&5%
American Coil, in cask lots,

3-16	¼	5-16	⅜	7-16	½	⅝	¾
$7.75	5.45	4.55	4.00	3.65	3.50	3.40	3.30

Less than cask lots, add ½¢@1¢ ₩ ℔.
German Coil, list Oct. 6, 1890..60@60&5%
German Halter Chain, list Oct. 6, 1890 60@60&5%
Covert Halter.....60&2%
Covert Traces.....35@2%
Covert Heel Chain.....50&2%
Oneida Halter Chain.....60@60&5%
Galvanised Pump Chain.....₩ 5½¢@6¢
Jack Chain, Iron.....75&10@80%
Jack Chain, Brass.....75@75&10%

Chalk—
White, case lots, ₩ gr 50¢; small lots 55 @56¢
Red, case lots...₩ gr 67¢; small lots 77 @78¢
Blue, case lots...₩ gr 75¢; small lots 85¢
See also Crayons.

Chalk Lines—See Lines.

Chisels—
Socket Framing and Firmer.
P. S. & W.
New Haven.
Witherby.
Mix.
Ohio Tool Co.
} ..75 @ 75&10 %
Douglass.....75@75&5%
Buck Bros.....80%
Merrill.....60&10@60&10&5%
L. & I. J. White.....30@30&5%
Tanged and Miscellaneous.
Tanged Firmers.....40&10@50%
Butchers'.....$4.75@5.00
Spear & Jackson's.....55 to 8
Buck Bros.....30%
Cold Chisels, ₩ ℔.....15@16¢

Chucks—
Beach Pat.....each, $8.00.....20%
Horse's Adjustable, each, $7.00, 20@20&5%
Danbury.....each, $6.00, 30@30&5%
Syracuse, Bals Pat.....25%
Graham Patent.....33⅓%
Skinner's Patent Chucks.
Combination Lathe Chucks.....33⅓%
Universal Lathe Chucks.....40%
Independent Lathe Chucks.....40%
Drill Chucks.....15%
Union Mfg. Co.,
Victor.....$8.50, 25%
Combination.....40%
Universal.....40%
Independent.....40%

Churns.
Tiffin Union, each, 5 gal. $3.25; 7 gal., $3.75; 10 gal..$4.25.
McDermaid Star Barrel Churn, each, 6 gal., $2.60; 10 gal., $2.75 15 gal. $3.00 20 gal. $3.25

Clamps—

R. I. Tool Co.'s Wrought Iron.....25%
Adjustable, Cincinnati.....15&10%
Adjustable, Hammers.....15%
Adjustable, Stearn's.....30@30&10%
Stearn's Adjustable Cabinet and Corner.....30@30&10%
Cabinet, Sargent's.....60%&10%
Carriage Makers', Sargent's.....70&10%
Carriage Makers', P., S. & W. Co..40&10%
Eberhard Mfg. Co.....40&5@40&10%
Parallel, C. H. Besly & Co.....25%
Warner's.....40&10@40&10&5%
Saw Clamps, see Vises. Saw Filers'.
Carpenters', Cincinnati.....25&10%

Cleavers.

Butchers'.

Bradley's.....25@30%
L. & I. J. White.....20&5%
Beatty's.....40@40&5%
New Haven Edge Tool Co.'s.....40%
P., S. & W.....33⅓&5@33⅓&10%
Foster Bros.....30%
Schulte, Lohoff & Co.....40@40&5%

Clips—

Norway, Axle, ¼ & 5-16.....55&5&5%
2nd grade Norway Axle, ¼ & 5-16. 65&5%
Superior Axle Clips.....66⅔&5&70%
Norway Spring Bar Clips, 5-16..60&5&5%
Wrought-Iron Felloe Clips.....₩ ℔, 5½¢
Steel Felloe Clips.....₩ ℔, 5¢
Baker Axle Clips.....25%

Cloth and Netting, Wire—See Wire, &c.

Cockeyes.....50%

Cocks, Brass.

Hardware list.....50&2%

Coffee Mills—See Mills, Coffee.

Collars, Dog, &c.

Medford Fancy Goods Co.....40&10%
Embossed, Gilt, Pope & Steven's list.....30&10%
Leather, Pope & Steven's list.....40%
Brass, Pope & Steven's list.....40%
Chapman Mfg. Company.....50&10@60%

Combs, Curry.

Fitch's.....50&10@50&10&10%
Rubber, per dos $10.00.....20%
Perfect.....50%
Kellogg's.....50&10
Sweet & Clark's.....50&10

Compasses, Dividers, &c.—

Compasses, Calipers, Dividers.70@70&10%
Bemis & Call Co.'s
Dividers.....60&5%
Compasses & Calipers.....50&5%
Wing and Inside or Outside.....50&5%
Double.....60%
(Call's Pat. Inside).....30%
Excelsior.....50%
J. Stevens & Co.'s.....25&10%
Starrett's
Spring Calipers and Dividers....25&10%
Lock Calipers and Dividers.....25%
Combination Dividers.....25%

Coopers' Tools—See Tools, Coopers'.

Cord—

Sash.

Common.....₩ ℔, 10¢ @ 11¢
Patent, good quality.....₩ ℔, 12 @ 12¢
White Cotton Braided, fair.₩ ℔, 24½@25¢
Common Russia Sash.....₩ ℔, 12½@13¢
Patent Russia Sash.....₩ ℔, 14¢
Cable Laid Italian Sash.....₩ ℔, 21@22¢
India Cable Laid Sash.....₩ ℔, 12¢
Silver Lake—
A Quality, White, 50¢.....25 %
A Quality, Drab, 55¢.....25 %
B Quality, White, 30¢.....10 %
B Quality, Drab, 35¢.....10 %
Sylvan Spring Extra Braided White,34¢
Sylvan Spring, Extra Braided, Drab..39¢
Semper Idem, Braided, White.....30¢
Egyptian, India Hemp, Braided.....26¢
Massachusetts, White.....30¢
Samson—
Braided, White Cotton, 50¢..30@30&5%
Braided, Drab Cotton, 55¢..30@30&5%
Braided, Italian Hemp, 55¢..30@30&5%
Braided, Linen, 80¢.....30@30&5%
Tate's Cotton Braided, White...₩ ℔, 28¢

Wire Picture.

Braided or Twisted.....75&10%

Corkscrews—See Screws, Cork.

Corn Knives and Cutters—See Knives, Corn.

Crackers, Nut—

Table (H. & B. Mfg. Co.).....40%
Blake's Pattern.....₩ dos $2.00, 10%
Turner & Seymour Mfg. Co.....50%

Cradles—

Grain.....50&5&2@50&10&2%

Crayons.

White Crayons, ₩ gross.....10¢
D. M. Stewart Mfg. Co., Metal Workers, ₩ gr, $2.50.....25%
D. M. Stewart Mfg. Co., Rolling Mill, ₩ gr, $2.50.....25%
See also Chalk.

Crow Bars—See Bars, Crow.

Curry Combs—See Combs, Curry.

Curtain Pins—See Pins Curtain.

Cutters—

Meat.

Dixon's ₩ dos.....40&5%

Nos.	1	2	3	4
	$14.00	$17.00	$19.00	$20.00

Woodruff's ₩ dos.....40&5%

Nos.	100	150
	$15.00	$18.00

Hales Pattern ₩ dos.....70@70&5%

Nos.	11	12	13
	$27.00	$33.00	$45.00

American.....30%

Nos.	1	2	3	4	B	5
Each	$5	$7	$10	$25	$50	$60

Enterprise.....30%

Nos.	10	12	22	32	42
Each	$3	$2.50	$4	$6	$15

Great American Meat Cutter.....30%

Nos.	112	116	118	120	122
Each	$2.00	$2.75	$3.00	$2.50	$4.00

Miles' Challenge ₩ dos.....45@45&10%

Nos.	1	2	3
	$22.00	$30.00	$40.00

Home No. 1..... ₩ dos, $26.00, 55&10%

Draw Cut, each:

Nos.	5	2	6	8
	$50	$75	$80	$225

.....20@25%
Great American.....30%
Beef Shavers (Enterprise).....20&10@30%
Little Giant (P. S. & W. Co.).....50%
Chadborn's Smoked Beef Cutter, ₩ doz $66.00

Tobacco.

Champion.....20&10@30%
Wood Bottom.....₩ dos $5.00@$5.25
All Iron.....₩ doz $4.25
Nashua Lock Co.'s..₩ doz, $18.00 50@55%
Wilson's.....55%
Sargents's.....₩ dos, $24, 55&10%
Acme.....₩ dos $20.00, 40%

Washer.

Smith's Pat.....₩ dos $12.00, 20&10&10%
Johnson's.....₩ dos $11.00, 33⅓%
Penny's, ₩ dos Pol. $14; Jap'd, $16.00, 55%
Appleton's.....₩ dos $16.00, 30&10%
Bonney's.....30&10%
Cincinnati.....25&10%

Dampers, &c—

Dampers, Buffalo.....40&10%
Buffalo Damper Clips.....40&10%
Crown Damper.....40%
Excelsior.....40&10%

Diggers, Post Hole, &c.—

Samson Post Hole Digger, ₩ doz $36.00, 25%
Fletcher Post Hole Augers, ₩ doz $36, 20%
Eureka Diggers.....₩ dos $12.50@14.00
Leed's.....₩ dos $8.00@9.00
Vaughan's Post Hole Auger, ₩ doz $13.00@14.00
Kohler's Little Giant.....₩ doz. $18.00
Kohler's Hercules.....₩ doz. 15.00
Kohler' New Champion.....₩ doz. $9.00
Schniedier.....₩ doz. $18.00
Ryan's Post Hole Diggers..₩ doz $24.00
Cronk's Post Bars, ₩ dos $60.00, 50&5@50&10%
Gibbs Post Hole Digger, ₩ doz $30.00, 50%
Imperial, ₩ doz $16.....45%

Dividers—

See Compasses.

Dog Collars—See Collars, Dog, &c.

Door Springs—See Springs, Door.

Drawers.

Money, ₩ dos.....$18&$20

Drawing Knives—See Knives, Drawing.

Drills and Drill Stocks—

Blacksmiths'.....each $1.75
Blacksmiths' Self-Feeding, each $7.50,20%
Breast, P. S. & W.....40&10%
Breast, Wilson's.....30&5%
Breast, Millers Falls.....each $3.00, 25%
Breast, Bartholomew's.....each $2.50, 25&10@40%
Ratchet, Merrill's.....20@20&5%
Ratchet, Ingersoll's.....25%
Ratchet, Parker's.....30@20&5
Ratchet, Whitney's.....20&10%
Retchet, Weston's.....20@25%
Ratchet, Moore's Triple Action...25@30%
Ratchet, Curtis & Curtis.....30%
Whitney's Hand Drill, Plain, $11.00; Adjustable, $12.00.....20&10%
Wilson's Drill Stocks.....10%
Automatic Boring Tools.....$1.75@$1.85

Twist Drills—

Morse.....50&10&5%
Standard.....50&10&5%
Syracuse (Metal list).....50&10%
Cleveland.....50&10&5%
Williams.....50&10&10%
New Process.....50&10&5%
Graham's Pat. Groove Shank 50&10&5%

Drill Bits.—See Augers and Bits.

Drill Chucks.—See Chucks.

Dripping Pans-See Pans, Dripping.

Drivers, Screw.

Douglas Mfg. Co.....20@20&10%
Disston's.....50%
Buck Bros.....30%
Stanley R. & L. Co.'s
Varnished Handles.....65&10%
Black Handles.....60&10%
Sargent & Co.'s
No. 1 Forged Blade.....60&10&10%
Nos. 20, 30 and 60.....66⅔&10&10%
P. S. & W.....70 %
Knapp & Cowles:
No. 1.....60&20&70%
No. 2.....60&10&10@70&5%
No. 3.....60&5@60&10%
Nos. 4 and 00, Acme and Ideal..50& 5@50&10&5%
Stearns'.....25&10&5%
Gay & Parsons.....35%
Champion.....25&10%
Clark's Pat.....30@33⅓%
Crawford's Adjustable.....30%
Ellrich's Socket and Ratchet..25@25&10%
Allard's Spiral, new list.....25%
Kolb's Common Sense ₩ dos $6.00,25&10%
Syracuse Screw-Driver Bits...30&30&5%
Screw-Driver Bits.....₩ dos. 50@75¢
Screw-Driver Bits, Parr's.....₩ gro $6.25
Fray's Hol. Hdle. Sets. No. 3. $12.00, 25@25&10%
P. D. & Co.'s all Steel.....50%
Cincinnati.....25&10%
Brace Screw Drivers.....25&10%
Buck Bros.' Screw-Driver Bits.....

Egg Beaters.—See Beaters, Egg.

Egg Poachers.—See Poachers, Egg.

Electric Bell Sets.—See Bells, Electric.

Emery.—No. 4 to No. 54 to Flour,CF

	46 gr.	150 gr.	F. FF.
Kegs, ₩ ℔	4½¢	5 ¢	2½¢
½ kegs, ₩ ℔	4½¢	5½¢	2½¢
¼ kegs, ₩ ℔	5 ¢	5½¢	3 ¢
10-℔ cans, 10 in case	6 ¢	6½¢	5 ¢
10-℔ cans, less than 10	10 ¢	10 ¢	7½¢

Enameled and Tinned Ware—See Ware, Hollow.

Escutcheon Pins—See Pins, Escutcheon.

Escutcheons.

Door Lock....Same dis as Door Locks.
Brass Thread.....60@60&10%
Wood.....25%

Expanded Metal.

List No. 5.

Lathing.....10%
Fencing, Painted Sheets.....20%
Netting, Painted Sheets.....20%
Door Mats, Galvanized.....25%
Window Guards, Paneled.....15%
Tree Guards, Paneled.....15%

Extractors, Lemon Juice—See Squeezers, Lemon.

Fasteners, Blind—

Mackrell's, ₩ dos. $1.00.....20@20&10%
Van Sand's Screw Pat., $15 ₩ gr..60&10%
Van Sand's Old Pat., $15.00 ₩ gr..55&10%
Washburn's Old Pattern, ₩ gr.....$9.00
Merriman's.....new lis.
Austin & Eddy No. 2008 ₩ gr.....$9.00
Security Gravity, ₩ gr.....$9.00

Faucets.—

Fenn's.....40%
Bohren's Pat. Rubber Ball.....25%
Fenn's Cork Stops.....33⅓%
Star.....60%
Frary's Pat. Petroleum.....40&5&2%
B. & L. B. Co.
West's Lock, Open and Shut Key...50%
Star, Metal Plug, new list.....40%
Lockport, Metal Plug, reduced list..60%
Metallic Key, Leather Lined....60&10@ 60&10&10%
Cork Lined.....70&5@70&10%
Burnside's Red Cedar.....50%
Burnside's Red Cedar, bbl lots....50&10%
John Sommers'
Peerless Best Block Tin Key.....40%
IXL, 1st quality, Cork Lined.....50%
Diamond Lock.....40%
Perfection, Fla. Red Cedar.....50%
Goodenough Cedar.....50%
Boss Metallic Key.....50%
Reliable Cork Lined.....60%
Western Pattern Cork Lined.....50%
Self-Measuring
Enterprise, ₩ doz $50.00.....20&10%
Lane's, ₩ doz $36.00.....25&10%
Victor, ₩ dos $36.00.....25&10%

Felloe Plates—See Plates, Felloe.

Fifth Wheels.—

Derby and Cincinnati.....45&5%
Brewster.....50&5%

Files—

Domestic—

Nicholson Files, Rasps, &c.....60&10@60&10&5%
Nicholson (X. F.) Files.....25%
Nicholson's Royal Files (Seconds).....75%
(extra prices on certain sizes)
G. & H. Barnett (Black Diamond).....60&10@60&10&5%
Eagle.....60&10&5&60&10&10%
Other makers, best brands60&10@60&20%
Fair brands.....60&10&10@70&5%
Second quality.....70&10@75&10%
Heller's Horse Rasps.....50&7½@50&10%
McCaffrey's Horse Rasps.....50&10%
Chelsea Horse Rasps, Hand Cut...50&10%

Imported—

Moss & Gamble....List, April 1 1883, 15%
Butcher.....Butcher's list, 20%
Stubs.....Stubs list, 25@30%
Turton's.....Turton's list, 20@25%
Greaves' Horse Rasps..American list, 60%

Fixtures.

Grindstone—

Sargent's Patent.....70&10%
Reading Hardware Co.....30&10%
P., S. & W. Co.....50&10%

Fluting Machines—See Machines, Fluting.

Fluting Scissors—See Scissors, Fluting.

Fodder Squeezers—See Squeezers, Fodder.

Forks—

Hay, Manure, &c., Asso List.65&5@65&10%
Hay, Manure, &c., Phila. List 60@60&5%
Plated, see Spoons.

Frames—

Saw—

White Vermont.....₩ gro $9.00@10.00
Red, Polished and Varnished.....₩ dos $1.50, 25%

Screen, Window and Door—

Porter's Pat. Window and Door Frame. 33⅓&10%
Warner's Screen Corner Irons.. 33⅓@@ 33⅓&10%
Stearns' Frames and Corners..25@25&10%
Cortland.....40@40&5%

Freezers, Ice Cream—

White Mountain.....60@60&5%
Granite State.....65@65&5%
Arctic.....70@70&5%
American.....60%
Buffalo Champion.....65@65&5%
Shepard's Lightning.....65@65&5%
Gem.....60%
Blizzard.....70%
Double Action Crown.....60%
Crown.....60%
Star.....50%
Peerless.....60&10%
Giant.....60%
Zero.....60&10&10%
Boss and Pet.....60&10&10&10%
Keystone, P. D. & Co., each $1.50.....20%

Fruit and Jelly Presses—See Presses, Fruit and Jelly.

Fry Pans—See Pans, Fry.

Funnels.

Gensdorff's Perfection, Standard and Globe; *Tin*, 1 gro., 10 %; 2 to 5 gro., 20 %; 5 to 10 gro.....30 %
Copper, 1 to 6 doz., 15 %; 6 to 12 doz., 20 %; over 12 doz.....25 %

Furnaces, Soldering.

Burgess No. 3 Gem, tin reservoir....$7.00
Burgess No. 3 Gem, copper reservoir. 8.50

Fuse—Dis. 12½%. ₩ 1000 ft.

Common Hemp Fuse, for dry ground..$2.70
Common Cotton Fuse, for dry ground 2.85
Single Taped Fuse, for wet ground.. 3.85
Double Taped Fuse, for very wet gr. 4.85
Triple Taped Fuse, for very wet gr.. 5.60
Small Gutta Percha Fuse, for water. 7.50
Large Gutta Percha Fuse, for water.13.00

Gates, Molasses—

Stebbin's Pattern.....75&10&5@80%
Stebbin's Genuine.....60&10&10%
Stebbin's Tinned Ends.....40&10%
Chase's Hard Metal.....50&10%
Bush's.....30%
Lincoln's Pattern.....70@70&10%
Weed's.....30&10%
Boss, ₩ dos:
No. 1, $7; No. 2, $8; No. 3, $9; No. 4, $10.....60&10&10%

Gauges.

Marking, Mortise, &c.....60&10%
Starrett's Surface, Center and Scratch. 25&10%
Wire, low list.....10&10%
Wire, Wheeler, Madden & Co.....10%
Wire, Morse's.....25%
Wire, Brown & Sharpe's.....10@20%
Wire, P. S. & W. Co.....10&10%

Gimlets—

Nail and Spike.....50&10&5%
"Eureka" Gimlets.....40&10%
"Diamond" Gimlets.....₩ gr $5.00
Double Cut, Shepardson's.....45@45&5%
Double Cut, Ives'.....60@60&5%
Double Cut, Douglass'.....40&10%
"Bee," ₩ gr $12.....25@25&5%

Glue—

Le Page's Liquid.....25@25&5%
Upton's Liquid.....35%
Improved Process.....25@25&5%

Glue Pots—See Pots, Glue.

Grease, Axle.

Fraser's.....Keg ₩ ℔ 4¢, Pail ₩ ℔ 5¢
Fraser's, in boxes.....₩ gr $9.50
Dixon's Everlasting, in bxs...₩ dos 1 ℔ $1.20; 2 ℔ $2.00
Dixon's Everlasting....10-℔ pails, ea. 35¢
Lower grades, special brands, ₩ gr $5.50@$7.00

Grindstones—

Small, at factory.....₩ ton $7.50@9.00
Family, Cleveland Stone Co.....20 %

Grindstone Fixtures—See Fixtures Grindstone.

Hack Saws—See Saws.

Hafts, Awl.

Sewing, Brass Fer. ₩ gr, $3.50.....45&10%
Pat. Sewing, Short..$1.00 ₩ dos.....40&10%
Pat. Sewing, Long.....₩ dos $1.20
Pat. Peg, Plain Top. ₩ gr $10.00...45&10%
Pat. Peg, Leather Top. ₩ gr $12.00..45&10%

Halters.

Covert's, Rope, Jute.....6½&10&10&2%
Covert's, Rope, 7-16-in., Jute.....70&2%
Covert's, Rope, ½-in. Hemp.....50&2%
Covert's Adj. Rope Halters.....40&2%
Covert's Hemp Horse and Cattle Tie, 50&2%
Covert's Jute Horse Ties.....70&2%
Covert's Jute Cattle Ties.....70&10&2%
Covert's Adj. Web Halters.....35&5&2%

Hammers—

Handled Hammers—

Maydole's, list Dec. 1, '85.....25&10@ 35%
Buffalo Hammer Co.
Humason & Beckley } 50@50&10%
Atha Tool Co.
Verree.....40&10@—%
C. Hammond & Son.....40&10@—%
Fayette R. Plumb.
"Artisans' Choice," A. E. Nail.40&12½%
Regular "Y. & P.," A. E. Nail.....50%
Horseshoe Turning Hammers.....50%
Other Hammers.....50&10%
Hartford, Nail Hammers.....40&20%
Hartford, Machinists, &c...50&5&50&10%
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 & 1.75.....30&10%
Nelson Tool Works.....40&10%
Warner & Nobles.....20@25
Peck, Stow & Wilcox.....40%
Sargent's.....33⅓&10%

Heavy Hammers and Sledges—

3 ℔ and under.....₩ ℔40¢
3 to 5 ℔.....₩ ℔36¢ } 70@70&10%
Over 5 ℔.....₩ ℔30¢
Wilkinson's Smiths.....10½¢@11¢₩ ℔

Handcuffs and Leg Irons—See Police Goods,

Handles—

Cross-Cut Saw Handles—

Atkins' No. 1 Loop, ₩ pair, 28¢; No. 3 13¢; No. 6, 16¢; No. 2 and No. 4 Reversible, 18¢.
Boynton's Loop Saw Handles, 50¢....60%
Champion.....15%

Iron, Wrought or Cast—

Door or Thumb.

Nos.	0	2	3
Per dos.	$0.90	$1.00	$1.25

60&10&10%
Boggin's Latches.....₩ dos 30¢@35¢
Bronze Iron Drop Latches..₩ dos 70¢ net
Jap'd Store Door Handles—Nuts, $1.02; Plate, $1.10; no Plate, $0.88.....net
Barn Door, ₩ doz $1.40.....10&10%
Chest and Lifting.....70%

Wood—

Saw and Plane.....40&10@40&10&5%
Hammer, Hatchet, Axe, Sledge, &c..40%
Brad Awl.....₩ gr $2.00
Hickory Firmer Chisel, ass'd. ₩ gr 4.50 } 25@40&10%
Hickory Firmer Chisel, large. ₩ gr 5.00
Apple Firmer Chisel, ass'd...₩ gr 5.00 } 40@40&10%
Apple Firmer Chisel, large...₩ gr 6.00
Socket Firmer Chisel, ass'd..₩ gr 3.00 } 50%
Socket Framing Chisel, ass'd. ₩ gr 5.00
I. S. Smith & Co.'s Pat File.....50%
File, assorted.....₩ gr 2 75 }
Auger, assorted.....₩ gr 5.00 } 50%
Auger, large.....₩ gr 7.00 }
Pat. Auger, Ives'.....30&10%
Pat. Auger, Douglass.....₩ set $1.25
Pat. Auger, Swan's.....₩ set $1.00
Hoe, Rake, Shovel, &c.....50&10 %

Hangers—

Barn Door, old patterns...60&10&10@70%
Barn Door, New England...60&10&10@70
Samson Steel Anti-Friction.....55%
Orleans Steel.....55%
Hamilton Wrought Wood Track.....55%
U. S. Wood Track.....65%
Champion.....60&10%
Rider and Wooster, Medina Mfg. Co.'s list.....70%
Climax Anti-Friction.....55%
Climax Anti-Friction for Wood Track55%
Zenith for Wood Track.....55%
Reed's Steel Arm.....50%
Challenge, Barn Door.....50%
Sterling.....50@50&10%
Victor, No. 1, $15.00; No. 2, $16.50; No. 3, $18.00.....50&2%
Cheritree.....50&10%
Kidder's.....50&10@60%
The Boss.....60&10%
Best Anti-Friction.....60&10%
Duplex (Wood Track).....60&10&5%
Terry's Pat., ₩ doz pr. 4 in, $10.00; 5 in. $12.00.....50&10%
Terry's Steel Anti-Friction Leader 50&10%
Terry's Steel Anti-Friction Ideal..50&10%
Cronk's Patent, Steel Covered.....50@5%
Wood Track Iron Clad, ₩ ft, 10¢.....50 &15@80%
Carrier Steel Anti-Friction.....50&10%
Architect, ₩ set $6.00.....20%
Eclipse.....20&10%
Felix, ₩ set $4.50.....20%
Richards'.....30@30&10%
Lane's Standard.....50&5@50&10%
Lane's New Standard.....50@50&5%
Ball Bearing Door Hanger..20&10@25&10%
Warner's Pat.....20&10@20&10&10%
Stearns' Anti-Friction.20&10@20&10&10%
Stearns' Challenge.....25&10@25&10&10%
Faultless.....40@40&5%
American, ₩ set $6.00.....20&10%
Rider & Wooster, No. 1, 62½¢; No. 2, 75¢.....40%
Paragon, Nos. 1, 2 and 3.....40&10%
Cincinnati.....25&10%
Paragon, Nos. 5, 5¼, 7 and 8.....20&10%
Crescent.....60@60&10%
Nickel Cast Iron.....50%
Nickel, Malleable Iron and Steel 40%
Scranton Anti-Friction Single Strap33⅓%
Wild West, 4 in. Wheel, $15.00; 5 in. Wheel, $21.00.....45%
Star.....40&10@40&10&5%
May.....50&5@50&10%
Barry, $6.00.....40&10%
Interstate.....50%
Magic.....45%

Harness Snaps—See Snaps.

Hatchets—

American Axe and Tool Co.
Blood's, Hunt's, Hurd's, Mann's, Peck's, Underhill's..... 40 & 10 @ 50&5 %
Buffalo Hammer Co.
Fayette R. Plumb.
C. Hammond & Son.
Kelly's.
Sargent & Co.
P., S. & W. Co.
Ten Eyck Edge Tool Co.
Collins.....10%
Schulte, Lohoff & Co.....60@50&5%

Hay and Straw Knives—See Knives.

Hinges—

Blind Hinges—

Parker.....75&2%
Palmer.....50&5&10%
Seymour.....70&2%
Huffer.....50%
Clark's, Nos. 1, 3, 5, 40 and 50 75&10&5@80%
Clark's Mortise Gravity.....50%
Sargent's Nos. 1, 3, 5, 11, 13 75&10@55&10&5%
Sargent's, No. 12.....77&10&10%
Reading's Gravity.....75&10@75&10&5%
Shepard's
Noiseless.....75&10%
Niagara.....80%
Buffalo.....80%
Clark's Genuine Pattern.....80%
O. S., Lull & Porter .....75&10%
Acme, Lull & Porter.....75%
Queen City Reversible. ...70&10&5@75%
Clark's Lull & Porter, Nos. 0, 1, 1½, 2, 2½, 3.....75&10@75%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%

Gate Hinges—

Western.....₩ doz $4.40, 60%
N. E.....₩ doz $7.00, 55%
N. E. Reversible.....₩ doz $5.20, 55&10%
Clark's, Nos. 1, 2, 3.....60&10&5%
N. Y. State.....₩ doz $5.00, 55&10%
Automatic.....₩ doz $12.50, 50%
Common Sense.....₩ doz pair $4.50, 50%
Seymour's.....45&10%
Shepard's.....60&10&5%
Reed's Latch and Hinges. ₩ doz $12.00, 50%

Spring Hinges—

Geer's Spring and Blank Butts.....40%
Union Spring Hinge Co.'s list, March 1891.....25%
Acme.....30%
J. S.....25&10%
Empire and Crown.....20%
Hero and Monarch.....55%
American, Gem, and Star.....20%
Oxford.....20%
Barker's Double Acting.....25%
Union Mfg. Co.....25%
Bommer's.....30%
Buckman's.....15@20%
Chicago.....30%
Wiles'.....10%
Devore's.....40%
Rex.....40%
Royal.....60%
Reliable.....60%
Champion.....60%
Bardsley's Patent.....40%
Stearn's.....50&10%
Niagara, Holdback pattern, per gross.....$14.00

Wrought Iron Hinges
List February 14, 1891.
Strap and T.....50&10%
Corrugated Strap and T.....50 & 10 %
Screw Hook and Strap..... { 6 to 12 in., ₩ D. 4¢ / 14 to 20 in., ₩ D. 3½¢ / 22 to 36 in., ₩ D. 3¢
Screw Hook and Eye.... { ½ in., ₩ D 7¾¢ / ⅝ in., ₩ D 5¾¢ / ¾ in., ₩ D 4¾¢
Rolled Blind Hinges, Nos. 32 and 34 50&10%
Rolled Blind Hinges, Nos. 232 and 234 55&10%
Rolled Plate.....70&10%
Rolled Raised.....70&10%
Plate Hinges "Providence" { 8, 10 & 12 in., ₩ D.....5¢ / over 12 in., ₩ D.....4¢

Hoes—

Eye—

D. & H. Scovil.....20%
Lane's Crescent Planters Pattern..45&5%
Lane's Razor Blade, Scovil Pattern...30%
Maynard, S. & O. Pat.....45&5%
Sandusky Tool Co., S. & O. Pat. } 50&10&5 @60%
Am. Axe and Tool Co., S. & O. Pat. }
Chattanooga Tool Co., S. & O. Pat..60& 5@60&10%
Grub.....60&10%

Handled—

Garden, Mortar, &c.....70%
Planter's, Cotton &c.....70%
Warren Hoe.....60%
Magic .....₩ doz $4.00

Hog Rings and Ringers—See Rings and Ringers.

Hoisting Apparatus—See Machines, Hoisting.

Hollow-Ware—See Ware, Hollow.

Holders.

Bag.

Sprengle's Pat.....₩ doz $18.....60%

Bit.

Extension,
Barber's, ₩ doz $15.00.....40@40&10%
Ives, ₩ doz $20.00.....60&5@60&10%
Diagonal.....₩ doz $24.00, 40%
Angular.....₩ doz $24.00, 40&5%

File and Tool—

Bals Pat.....₩ doz $4.00; 25%
Nicholson File Holders.....20%
Dick's Tool Holder.....20%

Hooks—

Cast Iron—

Bird Cage, Sargent's list.....
Bird Cage, Reading..... 60&10&10%
Clothes Line, Sargent's list..
Clothes Line, Reading list. 60&10@60&10&10%
Ceiling Sargent's list.....55&10&10%
Harness, Reading list..55&10&55&10&10%
Coat and Hat, Sargent's list. 55&10@60&10%
Coat and Hat, Reading .50&10@50&10&10%

Wrought Iron—

Cotton.....₩ doz $1.25
Cotton Pat. (N. Y. Mallet & Handle W'ks). 30%
Tassel and Picture (T. & S. Mfg. Co.)..50%
Wrought Staples, Hooks, &c. See Wrought Goods.

Wire—

Wire Coat and Hat, Gem, list April, 1886.....60%
Wire Coat and Hat, Miles', list April, 1886.....50%
Indestructible Coat and Hat.....45%
Wire Coat and Hat, Standard.....60%
Handy Hat and Coat.....50&10%
Steady Ceiling Hooks.....50&10%
Belt.....80@80&10%
Atlas, Coat and Hat.....60%
Bright Wire Goods, see *Wire.*

Miscellaneous.

Grass, No. 2, $2.00; No. 3, $2.25; No. 4, $2.50
Nolin's Grass.....₩ doz $2.25
Bush.....55@60%
Whiffletree—Patent.....55%
Hooks and Eyes—Malleable Iron. 70@70&10%
Hooks and Eyes—Brass.....60&10&10%
Fish Hooks, American.....50%
Bench Hooks .....See Bench Stops.

Horse Nails—See Nails, Horse.

Horse Shoes—See Shoes, Horse.

Hose, Rubber—

Competition.....75@75&5%
Standard.....60&10&5@60&10&10%
Extra.....50&10@60%
N. Y. B. & P. Co., Para.....25&5%
N. Y. B. & P. Co., Extra.....40@40&5%
N. Y. B. & P. Co., Dundee... 50&10 @ 60%

Huskers—

Blair's Adjustable.....₩ gr $8.00
Blair's Adjustable Clipper..₩ gr 7.00
Hubbard's Solid Steel.....₩ gr 4.50

Indurated Fiber-Ware—See Ware, Indurated Fiber.—

Irons.

Sad—

From 4 to 10, at factory ....₩ 100 ℔, $2.30@$2.40
Self-Heating.....₩ doz $9.00 net
Self-Heating, Tailors'....₩ doz $18.00 net
Mrs. Pott's Irons.....60@60&10%
Enterprise Star Irons.....60@60&10%
XX Cold Handle Sad Iron.....50&5@60%
Ideal Irons new list.50&10@50 & 10&10%
Salamander, Irons.....25%
B. B. Sad Irons, ₩ ℔.....3 @3¼¢
Combined Fluter and Sad Iron, ₩ doz, $15.00.....15%
Fox Reversible, Self-Fluter ₩ doz $24.00
Chinese Laundry (N.E. Butt Co.) 8½¢, 15%
New England.....5¢, 15%
Mahony's Troy Pol. Irons.....25%
Sensible, list Jan. 91.....50&10&5%
Sensible Tailor's Irons.....33⅓ %
National Self-Heating.....30 %

Soldering—

Soldering Coppers.....₩ ℔ 22 @ 23¢
Covert's Adjustable, list Jan. 1 1886. 35&2%

Irons, Pinking, per doz., 65¢.

Jack Screws—See Screws.

Jacks, Wagon.

Daisy.....40%
Victor.....40%
Lockport.....40%

Kettles—

Brass, Spun, Plain, list Jan. 1, '91..25&5%
Brass, Spun, Pld. W. M. list Jan. 1, '91.20%
Enameled and Tea—See Hollow Ware.

Keys—

Lock Asso'n list Dec. 30, 1886...50&10@ 60&5%
Eagle, Cabinet, &c.....33⅓&2%
Hotchkiss' Brass Blanks.....40%
Hotchkiss, Copper and Tinned.....40%
Hotchkiss' Pad. and Cab.....35%
Ratchet Bed Keys.....₩ doz $4.00, 15%
Wollensak Tinned.....50&10%

Knife Sharpeners—See Sharpeners, Knife.

Knives.

Butcher, Shoe, &c—

Wilson's Butcher Knives, List Dec. 8, 1890.....25%
Ames' Butcher Knives.....25%
Foster Bros.' Butcher, &c.....40%
Jordan's AAA1, Butchers', list....net
Nichols' Butcher Knives.....40&10%
W. W. Wilson, Butcher, 6 in., $2.00; 7 in., $2.70; 8 in., $3.80, &c.
Ames' Shoe Knives.....20@25%
Ames' Bread Knives. ₩ doz $1.50, 15@20%
Moran's Shoe and Bread.....20%
Hay and Straw.....See Hay Knives.
Table and Pocket.....See Cutlery.
Corn, Auburn Mfg. Co. Western Pat., $2.00
Corn Auburn Mfg. Co. Crescent.....$3.50
Corn—
Bradley's.....10%
Wadsworth's.....25%

Drawing—

Witherby, P. S. & W., Mix, New Haven..... ..75 @ 75&10 %
Merrill .....60&10@60&10&5%
Douglas .....75@75&5%
Watrous.....15&10@25%
L. & I. J. White.....20&5%
Bradley's.....35%
Adjustable Handle.....25@33⅓%
Wilkinson's Folding.....25@25&5%

Hay and Straw—

Lightning, from jobbers....$8.00 @ $9.00
Wadsworth's.....40&7½@40&10%
Carter's Needle.....₩ doz $11.00@$11.50
Heath's.....₩ doz $13.00@13.50
Auburn Hay, Com. and Spear Point..50%
Auburn, Straw.....40%
Nolin's Hay .....₩ doz. $7.00 @ $8.00

Mincing.

Am. (2d quality), ₩ gr., 1 blade, $7; 2 blades, $12; 3 blades, $18.....net
Lothrop's.....20&10%
Smith's, ₩ doz, Single, $2.00; Double, $3 40@45%
Knapp & Cowles.....50&10@90%
Buffalo Adjustable.....₩ doz $3.00 25%
Buffalo Double Adj'table, ₩ doz $3.00 25%

Knobs—

Door Mineral.....60@65%
Door Por. Jap'd.....70@75%
Door Por. Nickel.....$2.00@2.25
Door Por. Plated, Nickel.....$2.00@2.25
Drawer, Porcelain.....60&10@60&10&10%
Hemacite Door Knobs.....40&10@50%
Yale & Towne Wood, list Dec., 1885...40%
Furniture Plain.....75¢ gro inch, 10%
Furniture, Wood Screws.....25&10%
Base, Rubber Tip.....70&10&5%
Picture, Judd's.....60&10&10@70%
Picture, Sargent's.....70&10%
Picture, Hemacite.....35&5%
Shutter, Porcelain.....65&10%
Carriage, Jap.....₩ gro 80¢, 60&10%
Bardsley's Wood Door, Shutter, &c..40%

Ladies'—

Melting, Sargent's.....55&10%
Melting, Reading.....35&10%
Melting, Monroe's Pat...₩ doz $4.00, 40%
Melting, P. S. & W.....35&10@40%
Melting, Warner's.....30%

Lanterns—

Tubular—

Plain with Guards, ₩ doz.....$3.75@4.00
Lift Wire, with Guards.....$4.00@4.25
Square Plain, with Guards.....$3.75@4.00
Sq. Lift Wire, with Guards.....$4.50

Police Lanterns (including packages).

2¾-inch Bull's-eye Police regular..... ₩ doz $3.60
3-inch Bull's-eye Police regular..... ₩ doz $3.90
2¾-inch Bull's-eye Police flash light ₩ doz $4.00
3-inch Bull's-eye Police flash light ₩ doz $4.50

Lawn Mowers—See Mowers, Lawn.

Leaders, Cattle.

Humason, Beckley & Co.'s.....70%
Sargent's.....60%&10%
Hotchkiss.....30%
Peck, Stow & W. Co.....60&10%

Lemon Squeezers—See Squeezers, Lemon.

Lifters, Transom.

Wollensak's:
Class 3 and 4, Bronzed Iron.....50%
Class 3 and 4, Bronze Metal.....25%
Class 3 and 4, Brass.....35%
Skylight Lifters.....35%
Crown, Eagle and Shield.....50%
Reiher's, list Feb. 20, 1891.
Bronzed Iron Rods.....50&10&2%
Brass, Real Bronze or Nickel Plate..30%
Excelsior.....50&10& %
Shaw's.....50&10%
Payson's:
Universal.....60%
Solid Grip.....60%
Imperial.....50&10%

Lines—

Cotton and Linen Fish, Draper's.....50%
Draper's and Tate's Chalk.....60%
Draper's Masons' Lines, 84 ft., No. 1, $1.25; No. 2, $1.75; No. 3, $2.25; No. 4, $2.75; No. 5, $3.25.....25%
Cotton Chalk.....50%
Samson Cotton, No. 4, $2; No. 4½, $2.50; 10%
Silver Lake, Braided, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₩ gro.....25%
Mason's Linen, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50.
Mason's Colored Cotton.....45%
Wire Clothes.. Nos. 18 19 20
100 ft. $4 00 $3 50 $3.00
Ventilator Cord, Samson Braided, White or Drab Cotton..₩ doz $7.50, 20%

Locks, &c.—

Cabinet—

Eagle, Gaylord Parker and Corbin... } List March, '84, rev Jan. 1, '85..33⅓&2%
Deitz, Nos. 36 to 39.....40%
Deitz, Nos. 51 to 63.....40&10%
Deitz, Nos. 86 to 96.....30%
Stoddard Lock Co.....30&33⅓%
"Champion" Night Latches.....40%
Barnes Mfg. Co.....40@40&10%
Eagle and Corbin Trunk.....25&2%
"Champion" Cab. and Combin...33⅓%
Yale.....net prices
Romer's.....25%

Door Locks, Latches, &c.

R. & E. Mfg. Co., list Mar. 20, 1889. } 65&10@70% Much lower net prices often made.
Mallory, Wheeler & Co., list July, '88.
Sargent & Co., list Aug. 1, '88
Reading Hardware Co., list Feb. 2, '88,.
Brittan, Graham & Mathes, list Jan. 1890.....60&10&10%
Perkins' Burglar Proof.....60&25%
Plate.....33⅓&2%
Barnes Mfg. Co.....40@40&10%
Yale.....net prices
Deitz Flat Key.....30%
L. & C. Round Key Latches.....30&10%
L. & C. Flat Key Latches.....33⅓&10%
Romer's Night Latches.....15%
Brooklyn Latches.....50&10%
Shepardson or U. S.....35%
Seed's N. Y. Hasp Lock.....25%

Padlocks—

List June 10, 1891.....50&2%
Norwich Lock Mfg. Co., old list....70&2%
Yale Lock Mfg. Co.'s.....net prices
Eagle.....25&2%
Eureka, Eagle Lock Co.....40&2%
Romer's, Nos. 0 to 91.....30%
Romer's Scandinavian, &c., Nos. 100 to 505..15%
A. E. Deitz.....40%
Champon Padlocks.....40%
Hotchkiss.....30%
Star.....45%
Horseshoe.....₩ doz, $9, 40@40&10%
Barnes Mfg. Co.....40@40&10%
Nock's.....30%
Brown's Pat.....25%
Scandinavian.....90@90&10%
E. T. Fraim's Keystone Scandavian. Nos. 119, 120, 130 and 140.....90&10%
Other Nos.....65%
Ames Sword Co. up to No. 150.....40%
Ames Sword Co. above No. 150.....50%
Slaymaker Barry & Co.
No. 1010 line.....85&5%
No. 41 line.....45&10%
No. 61 line.....50&5%
No. 21 line.....75%

Sash, &c.

Clark's, No. 1, $10; No. 2, $8 ₩ gr..33⅓%
Ferguson's.....33⅓%
Morris and Triumph, list Aug. 16, 1886. 60&2%
Victor.....60&10&2%
Walker's.....10%
Attwell Mfg. Co.....25&33⅓%
Reading.....66⅔&10@66⅔&10&10%
Hammond's Window Springs.....40%
Common Sense, Jap'd, Cop'd and Br'zed.....₩ gr $4.00
Common Sense, Nickel Plated ₩ gr $10.00
Universal.....30%
Kempshall's Gravity.....60%
Kempshall's Model.....50@50&10%
Corbin's Daisy, list Feb. 15, 1886.....70%
Payson's Perfect.....60@60&10%
Hugunin's Sash Balances.....25&5&2%
Hugunin's New Sash Locks.....25&5&2%
Stoddard "Practical".....10%
Ives' Patent.....60&10@60&10&5%
Liesche's, No. 100, ₩ gr $8; 105, $10..30%
Davis, Bronze, Barnes Mfg. Co.....60%
Champion Safety, list March 1, 1888 55@55&5%
Security.....70%
Buckeye.....₩ gro $4.80

Lumber Tools—See Tools, Lumber

Lustre—

Four-ounce Bottles....₩ doz, $1.75; ₩ gross.....$17.00

Machines.

	Boring—Without Augers.	Upright.	Angular.	
Douglas		$5.50	$6.75	50%
Snell's, Rice's Pat.		5.50	6.75	40&10&10%
Jennings		5.50	6.75	45@45&10%
Other Machines...		2.35	2.75	
Phillips' Patent with Augers		7.00	7.50	
Miller's Falls		7.50		25%

Fluting.

Knox, 4½-inch Rolls.....$3.25 each } 35%
Knox, 6-inch Rolls.....$5.60 each }
Eagle, 3½-inch Roll, $2.15.....35%
Eagle, 5½-inch Roll, $2.85.....35%
Crown, 4½ in., $3.50; 6 in., $4.00; 8 in., $6.50 each.....35%
Crown Jewel 6 in.....$3.50 each, 35%
American, 5 in., $3.00; 6 in., $3.40; 7 in., $4.50 each.....35%
Domestic Fluter.....each, $1.50
Geneva Hand Fluter, White Metal ₩ doz $12, 25%
Crown Hand Fluter, Nos. 1, $15.00; $12.50; 3, $10.00.....30%
Shepard Hand Fluter, No. 85 ₩ doz 18 00 .....40%
Snepard Hand Fluter, No. 110 ₩ doz $11.00.....40%
Shepard Hand Fluter, No. 93 ₩ doz $8.00.....40%
Clark's Hand Fluter. ₩ doz $15.00.....35%
Combined Fluter and Sad Iron, ₩ doz $15.00.....30%
Buffalo ₩ doz $10.00.....10%

Hoisting—

Moore's Hand Hoist, with Lock Brake.....20%
Moore's Differential Pulley Block....40%
Energy Mfg. Co's.....25%
Sure Grip Steel Tackle Blocks.....25%

Washing—

Anthony Wayne, ₩ doz No. 1, $51; No. 2, $15; No. 3, $42
Western Star, ₩ doz No. 2, $45; No. 3 $48

Mallets.
Hickory ..... 20&10@20&10&10%
Lignumvitæ ..... 20&10@20&10&10%
R. & L. Block Co., Hickory & L. V. 30@30&10%

Mattocks. Regular list. 60&10@60&10&5%

Measures—
Standard Fiberware, No. 1, peck, ₱ dozen, $4; ½-peck, $3.50.

Meat Cutters—See Cutters, Meat.

Menders, Harness—
Per doz. $2.00

Mills.
Coffee—
Box and Side, List Jan. 1, 1888 .... 60&2%
American, Enterprise Mfg Co. 20&10@30%
The Swift, Lane Bros. ..... 20&10%

Mincing Knives — See Knives, Mincing.

Molasses Gates—See Gates, Molasses.

Money Drawers — See Drawers, Money.

Mowers, Lawn.
Pennsylvania. New Model, Excelsior, Continental, &c. ..... 60@60&5%
Philadelphia ..... 60@10%
Perfection ..... 60&10&10%
Easy ..... 60&10@60&10&5%
Other Machines ..... 60&10&5@70%

Muzzles—
Safety ..... ₱ doz. $3.00, 25 %

Nails.
Cut and Wire. See Trade Report.
Wire Nails, Papered.
Association list, July 15, '89, 75&10@80%
Tack Mfrs.' list ..... 70@70&10%
Wire Nails, Standard Penny.
Card June 1 '89 base .... $2.10 @ $2.20

Horse—

Nos.	6	7	8	9	10
Ausable	.28¢	26¢	25¢	24¢	23¢.

40&5&5&2%
Clinton, Fin. .19¢ 17¢ 16¢ 15¢ 14¢ 30%
Essex ..... 28¢ 26¢ 25¢ 24¢ 23¢. 40&5&5&2%
Lyra. ..... 19¢ 17¢ 16¢ 15¢ 14¢ ..... 30 %
Snowden 19¢ 17¢ 16¢ 15¢ 14¢ ..... 30 %
Putnam ..... 23¢ 21¢ 20¢ 19¢ 18¢. 1000 ℔ in year 15%
Vulcan ..... 23¢ 21¢ 20¢ 19¢ 18¢. 12½&5%
Northwest'n. 25¢ 23¢ 22¢ 21¢ 20¢. 25@25&5%
Globe ..... 23¢ 21¢ 20¢ 19¢ 18¢. 20&5&5%
Boston ..... 23¢ 21¢ 20¢ 19¢ 18¢. 20&5&5%
A. C. ..... 25¢ 23¢ 22¢ 21¢ 21¢. 25&10@33⅓&5%
C. B.-K. ..... 25¢ 23¢ 22¢ 21¢ 21¢. 25&10@33⅓&5%
Maud S. ..... 25¢ 23¢ 22¢ 21¢ 21¢. 40&10 %
Champlain .. 28¢ 26¢ 25¢ 24¢ 23¢. 25&10&10%
Saranac ..... 23¢ 21¢ 20¢ 19¢ 18¢ .. 30&10%
Champion ... 25¢ 23¢ 22¢ 21¢ 20¢. 10&10&10%
Capewell .... 28¢ 26¢ 5¢ 24¢ 23¢. 35&5@35&10%
Star ..... 23¢ 21¢ 19¢ 19¢ 18¢. 10&10@10&12½%
Anchor ..... 23¢ 21¢ 20¢ 19¢ 18¢ 35%
Western .... 23¢ 21¢ 20¢ 19¢ 18¢ .. 40&10%
Empire Bronsed. ..... 14 ₱ ℔.

Picture—
Brass Head, Sargent's list ..... 50&10&10%
Brass Head, Combination list ..... 50&10%
Porcelain Head, Sargent's list. 50&10&10%
Porcelain Head, Combination list.. 40&10%
Miles' Patent 40%

Nail Pullers.—See Pullers, Nail.

Nail Sets.—See Sets, Nail.

Nut Crackers.—See Crackers, Nut.

Nuts—List Dec. 18, 1889.

	Square.	Hex.
Hot Pressed	5.40¢	6.00¢ off list.
Cold Punched	5.00¢	5.10¢ off list.

In packages of 100 ℔, add 1-10¢ ₱ ℔, net; in packages less than 100 ℔, add ½¢ ₱ ℔, net.

Oakum—
Best or Government .... ₱ ℔ 7@7½¢
U. S. Navy ..... ₱ ℔ 6@6½¢
Navy ..... ₱ ℔ 5½@6¢

Oilers—
Zinc and Tin ..... 65&10@70%
Brass and Copper ..... 50&10@50&10&5%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4.00; No. 3, $4.40 ₱ doz. 10&10&5%
Malleable, Hammers, Old Pattern, same list 40%
Prior's Pat. or "Paragon" Zinc. 60&10&10%
Prior's Pat. or "Paragon" Brass 50%
Olmstead's Tin and Zinc 60%
Olmstead's Brass and Copper 50%
Broughton's Zinc 60%
Broughton's Brass 50%
Gem P. D. & Co. ..... ₱ gro. $2
Steel, Draper and Williams 50%

Openers, Can.
Messenger's Comet ..... ₱ doz $3.00, 25%
American ..... ₱ gross $3.00
Duplex ..... doz 25¢, 15@20%
Lyman's ..... ₱ doz $3.75, 20%
No. 4 French ..... ₱ doz $2.25, 5&60%
No. 5, Iron Handle ..... ₱ gr $6.00, 45&50%
Eureka ..... ₱ doz $2.50, 10%
Sardine Scissors ..... ₱ doz $2.75@3.00
Star ..... ₱ doz $2.75
Sprague, No. 1, $2.00 2, $2.25; 3, $2.50 50&10&10%
Excelsior No. 1 $2.50: No. 2, $1.50 ... 40%
World's Best, ₱ gross, No. 1, $12.00 No. 2, $24.00; No. 3, $36.00 ..... 50&10%
Universal, ₱ doz $3.00 ..... 45&5%
Domestic, ₱ doz $2.50 ..... 45%
Champion ₱ doz $2.00 ..... 5%

Packing, Steam—
Rubber—
Standard ..... 60&5@65%
Extra ..... 50@50&5%
N. Y. B. & P. Co., Standard 50%
N. Y. B. & P. Co., Empire 60%
N. Y. B. & P. Co., Salamander 25%
Jenkins' Standard. ₱ ℔ 80¢ .... 25@25&5%

Miscellaneous—
American Packing ..... 10¢@11¢ ₱ ℔
Russia Packing ..... 14¢ ₱ ℔
Italian Packing ..... 13¢@14¢ ₱ ℔
Cotton Packing ..... 15¢@17¢ ₱ ℔
Jute .. .. 7¢@8¢ ₱ ℔

Padlocks—See Locks.

Pails.
Galvanized Iron—

	Quarts	10	12	14
Hill's Light Weight, ₱ doz.	$2.75	3.00	3.25	
Hill's Heavy Weight, ₱ ds.	3.00	3.25	3.75	
Helwig's.	2.50	2.75	3.00	
Sidney Shepard & Co.	2.35	2.85	3.05	
Iron Clad	2.50	2.75	3.00	
Fire Buckets	2.75	3.25	3.50	

Buckets, see Well Buckets.
Indurated Fibre Ware—25%
Star Pails, 12 qt ..... ₱ doz $5 40
Stable and Milk, 14 qt ..... ₱ doz 6 60
Fire Pails, deep ..... ₱ doz $5.40
" " round bottom .... ₱ doz $ .80
Standard Fibre Ware.

	Plain.	Decr'd
Water Pails, 12 qt., per doz.	$4.00	$4.50
Dairy Pails, 14 qt., per doz.	4.50	5.00
Fire Pails, No. 1, 12 qt. per doz	4.50	
Fire Pails, No. 2, 14 qt. per doz	5.00	
Sugar Pails	6.00	6.50
Horse Pails	5.00	
Buggy Pails	4.00	
Slop Jars (bal. trap)	8.00	9.00
Chamber Pails, 14-qt	6.50	7.50

Pans.
Dripping.
Small sizes ..... ₱ ℔ 6½¢
Large sizes ..... ₱ ℔ 5½¢
Silver & Co. (Covered) 40%
Fry—
Standard List:

No.	0	1	2	3	4
₱ doz.	$3.00	$3.75	$4.25	$4.75	$5.25
No.	5	6	7	8	
₱ doz.	$6.00	$7.00	$8.00	$9.00	

Polished, regular goods ..... 75@75&10%
Acme Fry Pans ..... 60&10%
Dust—
Steel Edge, No. 1 ..... ₱ doz $1.75

Paper and Cloth—
Sand and Emery—
List April 19, 1886 ..... 50@50&10%
Sibley's Emery and Crocus Cloth 30%

Parers.
Apple.
Advance ..... ₱ doz $4.75
Baldwin ..... ₱ doz 5.25
Bonanza ..... each 5.00
Daisy ..... ₱ doz 4.00
Dandy ..... each 7.50
Eclipse ..... ₱ doz 4.25
Eureka, 1888 ..... each 16.00
Family Bay State ..... ₱ doz 12.00
Favorite ..... ₱ doz 5.00
Gold Medal ..... ₱ doz 4.00
Ideal ..... ₱ doz 4.00
Improved Bay State .. ₱ doz 27.00 @ 30.00
Little Star ..... ₱ doz 4.50
Monarch ..... ₱ doz 13.50
New Lightning ..... ₱ doz 5.50
Oriole ..... ₱ doz 4.00
Penn ..... ₱ doz 4.00
Perfection ..... ₱ doz 4.00
Pomona ..... ₱ doz 4.00
Rocking Table ..... ₱ doz 6.00
Turn Table ..... ₱ doz 4.50
Victor ..... ₱ doz 13.50
Waverly ..... ₱ doz 4.00
White Mountain ..... ₱ doz 4.00
72 ..... ₱ doz 4.25
78 ..... ₱ doz. 7.00
Potato—
White Mountain ..... ₱ doz $4.50
Antrim Combination ..... ₱ doz $5.50
Hoosier ..... ₱ doz $13.50
Saratoga ..... ₱ doz $5.50

Pencils—
Faber's Carpenters' ..... high list 50%
Faber's Round Gilt ..... ₱ gro $5.25
Dixon's Lead ..... ₱ gro $4.50
Dixon's Lumber ..... ₱ gro $6.75
Dixon's Carpenters' 10%

Picks—
Railroad or Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00 ..... 60&10@60&10&5%

Picture Nails.—See Nails, Picture.

Pinking Irons.—See Irons, Pinking.

Pins.
Bow—
Humason, Beckley & Co.'s ..... 60&10%
Sargent & Co's .... $17 and $18 ..... 60&10%
Peck, Stow & W Co... 50&10@50&10&5%
Curtain—
Silvered Glass ..... net
White Enamel ..... net
Escutcheon.
Iron, list Nov. 11, 1885 .. 50&10@50&10&5%
Brass ..... 60@60&5%

Pipe, Wrought Iron—
List September 18, 1889.
1¼ and under, Plain 55%
1¼ and under, Galvanized 45%
1½ and over, Plain 65%
1½ and over, Galvanized 52½%
Boiler Tubes,
Sizes up to 2¾ in. inclusive 55%
Sizes 3 to 6 in. inclusive 65%
Sizes 7 in. and up 55%
Casing 55%

Planes and Plane Irons—
Wood Planes—
Molding ..... 40&10%
Bench, First Quality ..... 50&10%
Bench, Second Quality ..... 55&10%
Bailey's (Stanley R. & L. Co.). .. 40&10%
Iron Planes—
Bailey's (Stanley R. & L. Co.). ..... 40&10@40&10&10%
Miscellaneous Planes (Stanley R & L. Co.) ..... 20&10@20&10&10%
Victor Planes (Stanley R. & L. Co.). ..... 20&10@20&10&10%
Steer's Iron Planes ..... 35@35&10%
Merrien Mal. Iron Co.'s ..... 40@40&10%
Davis's Iron Planes ..... 40@40&10%
Birmingham Plane Co. ..... 50@50&10%
Gage Tool Co.'s Self-Setting .. 20&10&10%
Chaplin's Iron Planes ..... 40@40&10%
Sargent's ..... 30&10@30&10&10%
Standard Tool Co. ..... 50@50&5%
Plane Irons—
Butcher's ..... $5.00@$5.25 to £
Buck Bros 30%
Auburn "Thistle" ..... } ...30&10%
Ohio ..... }
Sandusky ..... }
S. & I. J. White 35%

Plates.
Felloe ..... ₱ ℔ 6¢@6½¢

Pliers and Nippers—
Button's Patent ..... 50@50&10%
Hall's No. 2, 5 in., $13.50; No. 4, 7 in. $21.00 ₱ doz ..... 20&10@33⅓%
Humason & Beckley Mfg. Co. .50@50&10%
Lindsay's Giant 40%
Gas Pliers 60%
Gas Pliers, Custar's Nickel Plated. .60&5%
Eureka Pliers and Nippers 40%
Russell's Parallel 25%
P. S. & W. Cast Steel 50%
P. S. & W. Tinners' Cutting Nippers, add 6% dis 10%
Carew's Pat. Wire Cutters 20%
Morrill's Parallel, ₱ doz, $12.00 ... 30&5%
Cronk's 8 in., $15.00; 10 in. $21.00, 40@40&5%

Plumbs and Levels—
Regular List ..... 70&10@70&10&10%
Disston's 50%
Pocket Levels ..... 70&10@70&10&10%
Davis Iron Levels 30%
Davis' Inclinometers ..... 10&10%

Poachers.
Egg.
Buffalo Steam Egg Poachers, ₱ doz, No. 1, $6.00; No. 2, $9.00 ..... 25%
Silver & Co., 6-Ring.. ₱ doz $4; 3-Ring $2

Pokes, Animal—
Bishop's I. X. L. ..... ₱ doz $6.00
Bishop's O. K. ..... ₱ doz $5.25
Bishop's Pioneer ..... ₱ doz $3.75
Bishop's American ..... ₱ doz $2.75
Eagle, Double Stale ..... ₱ doz $5.75
Eagle, Single Stale ..... ₱ doz $3.75
Buckeye, Single Stale ..... ₱ doz $2.75

Police Goods.
R. I. Tool Co., Handcuffs, $15.00 ₱ doz 10%
R. I. Tool Co., Leg Irons, $25.00 ₱ doz 10%
Tower's 25%
Daley's Improved Handcuffs: 2 Hands, Polished, ₱ doz $48.00; Nickeled, $57.00: 3 Hands, Polished, ₱ doz $72.00; Nickeled, $84.00 ..... 25%
J. P. Lovell's Police Goods 25%

Polish, Metal.
Prestoline 30%
Prestoline Paste 33⅓%
Gaston's Silver Compound 33⅓%

Polish, Stove.
Joseph Dixon's ..... ₱ gro $6.00, 10%
Gem ..... ₱ gro $4.50, 10%
Gold Medal ..... ₱ gro $6.00, 25%
Mirror ..... ₱ pro $6.00, —%
Lustro ..... ₱ gro $4.75
Ruby ..... ₱ gro $3.75
Rising Sun, 5 gro lots ..... ₱ gro $5.50
Dixon's Plumbago ..... ₱ ℔ 8¢
Boynton's Noon Day, ₱ gro 13.00
Parlor Pride Stove Enamel.. ₱ gro
Yates' Liquid, 2 3 5 10 gal.... ₱ gal ..$0.80 .70 .60 .50
Yates Standard Paste Polish, 10-℔ cans, ₱ ℔ 12½¢
Jet Black ..... ₱ gro $3.50
Japanese ..... ₱ gro $3.50
Fireside ..... ₱ gro $2.50
Diamond O. K. Enamel ..... ₱ gro $19.00
Bonnell's Liquid Stove Polish. ₱ gro $9.00
Bonnell's Paste Stove Polish.. ₱ gro $6.00
Black Eagle Bensine Paste, 5 and 10 ℔ cans ..... 12½¢
Black Jack Water Paste, 5 and 10 ℔ cans ..... 12½¢
Nickel Plate Paste ..... ₱ gro $6.00
Crown Paste ..... ₱ gross, $7.20
Crown Paste, in 5 and 10 ℔ pails ₱ ℔ 12¢
Black Flag ..... ₱ gross, $7.20
Black Flag, 5 and 10 ℔ pails, ... ₱ ℔, 12¢
Black Flag, liquid, in bottles, ₱ gro. .$8.00

Poppers, Corn—
Round or Square, 1 qt.. ₱ gr $10.00@10.50
Round or Square, 1½ qt.. ₱ gr $15@15.50
Round or Square, 2 qt.. ₱ gr $18.50@19.00

Post Hole and Tree Augers and Diggers—See Diggers, Post Hole, &c.

Potato Parers—See Parers, Potato.

Pots.
Glue—
Tinned ..... 40&10@40&10&5%
Enameled ..... 40&10@40&10&5%
Family, Howe's "Eureka" 40%
Family, L. F. C.'s "Handy" 50%

Presses.
Fruit and Jelly—
Enterprise Mfg. Co. ..... 20&10@30%
Henis ..... ₱ doz $3.50
Shepard's Queen City 40%
Silver & Co. ..... ₱ doz $2.75

Pruning Hooks and Shears.—See Shears.

Pullers.
Nail.
Scranton ..... ₱ doz $18.00, 33⅓%
Curtiss Hammer ..... ₱ doz $9.00
Giant, No. 1 ..... ₱ doz. $18.00, 10%
Giant, No. 2 ..... ₱ doz, $15.00, 10%
Pelican ..... ₱ doz, $9.00, 25%
Eclipse ..... each, $2.00 net

Pulleys—
Hot House, Awning, &c. ..... 60&10%
Japanned Screw ..... 60&10%
Brass Screw ..... 60&10%
Japanned Side ..... 66⅔&10%
Japanned Clothes Line ..... 60&10%
Empire Sash Pulley ..... 55@60%
Moore's Sash, Anti-Friction 50%
Hay Fork, Solid Eye, $4.00; Swivel, $4.50 ..... 50&10&50&10&5%
Hay Fork, "Anti-Friction," 5 in. Solid, $5.70 ..... 50&10%
Hay Fork, "F" Common and Pat. Bushed 20%
Hay Fork, Tarbox Pat. Iron 20%
Hay Fork, Reed's Self-Lubricating ... 60%
Shade Rack 45%
Tackle Blocks ..... See Blocks
Moore's Anti-Friction 5 in. Wheel, ₱ doz $12.00 ..... 40%

Pumps—
Cistern, Best Makers ..... 60@60&10%
Pitcher Spout, Best Makers .... 67½@70%
Pitcher Spout, Cheaper Goods. 70@70&5%

Punches—
Saddlers' or Drive, good, ₱ doz. .. 60@65%
Bemis & Call Co.'s Cast Steel Drive. .50&5%
Bemis & Call Co's Springfield Socket. 50&5%
Spring, good quality .... ₱ doz $2.50@2.60
Spring, Leach's Pat. 15%
Bemis & Call Co.'s Spring and Check . 40%
Solid Tinners', P. S. & W. Co., ₱ doz $1.44, 50%
Tin'rs' Hollow Punches P. S. & W. Co. 20&5%
Rice Hand ..unches 15%
Avery's Revolving 40%
Avery's Saw-Set and Punch. See Saw Sets

Rail—
Sliding Door, Wr't Brass, ₱ ℔ 35¢ 15%
Sliding Door, Bronzed Wr't Iron .. ₱ ft. 7¢
Sliding Door, Iron, Painted, ₱ foot 4¢, 40%
Barn Door, Light, In. ½ ⅝ ¾
Per 100 feet $2.00 2.50 3.00 10%
B. D. for N. E. Hangers—

	Small.	Med.	Large.
Per 100 feet	$2.15	2.70	3.25..net

Terry's Steel Rail, ₱ foot ..... 4½¢
Victor Track Rail, 7¢ ₱ foot ..... 50&2%
Carrier Steel Rail, ₱ foot ..... 4½¢
Moore's Wrought Iron 25%

Rakes—
Cast Steel, Association goods .. 66⅔&70%
Cast Steel, outside goods 60&10&10@70&5%
Malleable ..... 70@70&5%
Gibbs Lawn Rake ..... $12.00, 50&10%
Canton Lawn Rake ..... $9.00, 50&10%
Ft. Madison Prize Bow Brace and Peerless 65%
Fort Madison Steel Tooth Lawn Rake, $6.00 ..... 25%

Razors—
J. R. Torrey Razor Co 30%
Wostenholme and Butcher, $10.00 to £, 10%
Jordan's AAAI, new list ..... net
Jordan's Old Faithful, new list ..... net
Galvanic ..... ₱ doz $15.00

Razor Strops—See Strops, Razor.

Rings and Ringers.
Bull Rings—
Union Nut Co. 55%
Sargent's ..... 66⅔&10@70&5%
Hotchkiss' low list 30%
Humason, Beckley & Co.'s. ..... 70&10%
Peck, Stow & W. Co's. .50&10@50&10&10%
Ellrich Hdw. Co., White Metal, low list. 50@50&10%
Hog—
Top of the Hill Ringers. ..... ₱ doz $2.00
Top of the Hill Rings. ..... ₱ doz $1.25
Hill's Improved Ringers ..... ₱ doz $1.25
Hill's Old Style Ringers. ..... ₱ doz $1.12½
Hill's Tongs. ..... ₱ doz $3.00
Hill's Rings. ..... ₱ doz bxs $1.00
Perfect Rings. ..... ₱ doz bxs $1.50
Perfect Ringers. ..... ₱ doz $2.15@$2.25
Blair's Hog Ringers. ..... ₱ doz $2.00
Blair's Hog Rings. ..... ₱ doz 98¢@$1.00
Champion Ringers. ..... ₱ doz $2.00
Champion Rings, Double. ..... ₱ doz $2.25
Brown's Ringers. ..... ₱ doz $2.00
Brown's Rings. ..... ₱ doz $1.15@1.25
Electric Hog R'ngs ... ₱ doz boxes $1.50
Electric Hog Ringers ..... ₱ doz $2.66

Rivets and Burrs—
Iron, list Nov. 17, '87 ..... 40%
Copper ..... 60@60&10%
Coppered Iron, Bettina Brand. 40%

Rivet Sets—See Sets.

Rods—
Stair, Brass ..... 35&2%
Stair, Black Walnut .. .. ₱ doz 40¢

Rollers—
Barn Door, Sargent's list ..... 60&10&10%
Acme Moore's Anti-Friction. 55%
Union Barn Door Roller 70%

Rope.
Manila ..¼ in. and larger ..... ₱ ℔ 9¾¢
Manila ..... ⅜ in. ₱ ℔ 10¼¢
Manila ..... ¼ and 5-16 in. ₱ ℔ 10¾¢
Manila Tarred Rope. ..... ₱ ℔ 9¼¢
Manila, Hay Rope ..... ₱ ℔ 9¾¢
Sisal ..... ½ inch and larger ₱ ℔ 6¾¢
Sisal ..... ⅜ in. ₱ ℔ 7¼¢
Sisal ..... ¼ and 5-16 in. ₱ ℔ 7¾¢
Sisal, Hay Rope. ..... ₱ ℔ 6¾¢
Sisal, Tarred Rope. ..... ₱ ℔ 6¼¢
Sisal, Medium Lathe Yarn ..... ₱ ℔ 5½¢
New Zealand ..½ in. and larger ₱ ℔ 6¾¢
New Zealand ..... ⅜ inch, ₱ ℔ 7¼¢
New Zealand ¼ and 5-16 inch, ₱ ℔ 7¾¢
New Zealand, Hay Rope. ..... ₱ ℔ 6¾¢
New Zealand, Tarred Rope. ... ₱ ℔ 6¼¢
Note.—Manufacturers' prices on above ¼¢ ₱ ℔ less, f.o.b. factory.
Cotton Rope ..... ₱ ℔ 13½@16¢
Jute Rope ..... ₱ ℔ 6¼@6¾¢
Wire—
List May 1, 1886.
Iron ..... 32½&2½%
Iron, Galvanized ..... 40&2½%
Cast Steel ..... 40&2½%

Rules—
Boxwood ..... 80&10&10@80&10&10&10%
Ivory ..... 50@50&10%
Starrett's Rules and Straight Edges, Steel ..... 25&10%

Sad Irons—See Irons, Sad.

Sand and Emery Paper and Cloth—See Paper and Cloth, Sand and Emery

Sash Cord—See Cord, Sash.

Sash Locks—See Locks, Sash.

Sash Weights See Weights, Sash.

Sausage Stuffers or Fillers—See Stuffers or Fillers, Sausage.

Saws—
Disston's Circular 45%
Disston's Cross Cuts 45%
Disston's Hand 20%
Woodrough & McParlin.
Hand, Panel and Rip. 25%
Narrow Champion Cross Cuts with Handles, ₱ foot. ..... 20¢
Champion Thin Back Cross Cuts, ₱ foot. ..... 28¢
Champion Extra Thin Back Cross Cuts, ₱ foot. ..... 31¢
One Man Champion Cross Cuts, ₱ foot. ..... 40¢
Wheeler, Madden & Clemson Mfg. Co. Hand, Panel and Rip. 30%
Narrow Champion Cross Cuts with Handles, ₱ foot. ..... 20¢
Champion Thin Back Cross Cuts, ₱ foot. ..... 28¢
Champion Extra Thin Back Cross Cuts, ₱ foot. ..... 31¢
One Man Champion Cross Cuts. ₱ ft. 10
Atkins' Circular Shingle and Heading dis 50%
Atkins' Silver Steel Diamond X Cuts ₱ foot 70¢
Atkins' Special Steel Dexter X Cuts ₱ foot 50¢
Atkins' Special Steel Diamond X Cuts ₱ foot 32¢
Atkins' Champion and Electric Tooth X Cuts. ..... ₱ foot 30¢
Atkins' Hollow Back X Cuts. .₱ foot 20¢
Atkins' Mulay, Mill and Drag. 40%
Atkins' One-Man Saw, with handles, ₱ foot 40¢
Peace Circular and Mill. 45%
Peace Hand Panel and Rip. 25%
Peace Cross Cuts. 45%
Richardson's Circular and Mill. 45%
Richardson's X Cuts 45%
Richardson's Hand, &c. 25%
C. E. Jennings & Co., Hand, Panel and Rip 25%

ntack Saws—

Griffin's, complete.....40&10@50%
Griffin's Hack Saw, Blades....40&10@50%
Star Hack Saws and Blades.....25%
Eureka and Crescent.....25%

Scroll—

Lester, complete, $10.00.....25%
Rogers, complete, $4.00.....25%
Barnes' Builders' and Cabinet Makers', $15.....25%
Barnes' Scroll Saw Blades.....35%

Saw Frames—See Frames, Saw.

Saw Sets—See Sets, Saw.

Saw Tools—See Tools, Saw.

Scales—

Hatch, Counter, No. 171, good quality, ₩ doz $21.00
Hatch, Tea, No. 161....₩ doz $6.75@$7.00
Union Platform, Plain.....$2.10@2.20
Union Platform, Striped.....$2.40@2.50
Chatillon's Grocers' Trip Scales 50%
Chatillon's Eureka.....25%
Chatillon's Favorite.....40%
Family, Turnbulls.....30@30&10%
Riehle Bros.' Platform.....40%

Scale Beams—See Beams, Scale.

Scissors. Fluting.....45%

Scrapers—

Adjustable Box Scraper (S. R. & L. Co.) $6.50.....30&10%
Box, 1 Handle.....₩ doz $4.00, 10%
Box, 2 Handle.....₩ doz $6.00, 10%
Defiance Box and Ship.....20&10%
Foot.....50&10@60%
Ship, Common .....₩ doz $3.50 net
Ship, R. I. Tool Co.....10%

Screen Window and Door Frames—See Frames.

Screw Drivers—See Drivers, Screw.

Screws.

Bench and Hand—

Bench, Iron.....55&10@55&10&10%
Bench, Wood, Beech.....₩ doz $2.25
Bench, Wood, Hickory.....20&10%
Hand, Wood .....25&10@25&10&5%
Lag, Blunt Point, list Jan. 1, 1890..75&10%
Coach and Lag, Gimlet Point, list Jan. 1, 1890.....75@75&10%
Bed.....25&5%
Hand Rail, Sargent's.....60%&10%
Hand Rail, H. & T. Mfg. Co...70&10@75%
Hand Rail, Am. Screw Co.....75%
Jack Screws, Millers Falls list..50@50&5%
Jack Screws, P. S. & W.....35%
Jack Screws, Sargent...60&10@60&10&5%
Jack Screws Stearns'.....40@40&10%

Cork—

Humason & Beckley Mfg. Co..40&10@50%
Williamson's.....33⅓@33⅓&5%
Howe Bros & Hulbert.....35%

Machine—

Flat Head, Iron.....55%
Round Head, Iron 50%

Wood—

List January 1, 1891.

Flat Head Iron.....72½% } @ of-
Round Head Iron.....67½% } ten given.
Flat Head Brass.....72½% } Extra 10 &
Round Head Brass.....65 % } 10&5 %
Flat Head Bronze.....72½% } of-
Round Head Bronze.....65 % } ten given.
Rogers' Drive Screws.....83⅓% } Extra 10 &
10&5 %

Scroll Saws—See Saws, Scroll.

Scythes.

Grain.....40&5@40&10%
Grass.....40&10@50%

Scythe Snaths—See Snaths, Scythe

Sets.

Awl and Tool.

Aiken's Sets, Awls and Tools, No. 20, ₩ doz $10.00.....55&10%
Fray's Adj. Tool Hdls., Nos. 1, $12; 2, $18; 3, $12; 4, $9.....25@25&10%
Miller's Falls Adj. Tool Hdls., Nos. 1, $12, 2, $18.....25%
Henry's Combination Haft...₩ doz $6.50
Brad Sets, No. 42, $10.50; No. 43, $12.50..70&10&5%
Stanley's Excelsior: No. 1, $7.50; No. 2, $4.00; No. 3, $5.50.....30&10%

Nail—

Square.....₩ gr., $4 00@$4.25
Round.....₩ gr. $3.25
Buck Bros.....27½%
Cannon's Diamond Point...₩ gr.,$12, 20%

Rivet,

Regular list.....50&10%

Saw—

Stillman's Genuine...₩ doz $5.00@7.75, 40&5%
Stillman's Imita.....₩ doz $3.25@5.25, 40&5@40&10%
Common Lever .....₩ doz $2.00, 40&5%
Morrill's No. 1, $15.00; Nos. 3&4, $24.00, 40&10@50%
Leach's .No. 0, $8 00; No. 1, $15, 15@20%
Nash's 20&10@20&10&10
Hammer, Hotchkiss.....$5.50, 10%
Hammer, Bemis & Call Co.'s new Pat. 30&5%
Bemis & Call Co.'s Lever and Spring Hammer.....30&5%
Bemis & Call Co.'s Plate.....10%
Bemis & Call Co.'s Cross Cut 12½%
Aiken's Genuine.....$13.00, 50&10%
Aiken's Imitation.....$7.00, 55&5%
Hart's Pat. Lever.....20%
Disston's Star.....25%
Leopold.....40&10@50%
Atkin's Lever.....₩ doz No. 1, $6.00
Atkin's Criterion.....₩ doz No. 1, $6.00
Croissant (Keller), No. 1, $15.00; No. 2, $24.00.....40&10%
Avery's Saw Set and Punch.....50%
Chieftain Co.'s Superior.....₩ doz $7 00
Chieftain Co.'s Royal.....₩ doz $7.50
Crescent.....₩ doz $3.00

Sharpeners, Knife.

Parkins
Applewood Handles...₩ doz $6.00, 40%
Rosewood or Cocobolo.₩ doz $9.00, 40%

Shaves, Spoke.

Iron.....45%
Wood.....30%
Bailey's (Stanley R. & L. Co.).....40&10%
Stearns'.....30&10%
Cincinnati.....25&10%
Goodell's, ₩ doz $9.00.....25%

Shears—

American (Cast) Iron...75&10@75&10&5%
Barnard's Lamp Trimmers...₩ doz $3.75
Tinners'.....20&2%
Seymour's, List, Dec., 1881. 60&10&10@60&10&10&5%
Heinisch's, List, Dec., 1881. 60&10&10@60&10&10&5%
Heinisch's Tailor's Shears.....33⅓%
Cast Steel Trimmers:
First quality .....80@80&10%
Second quality.....80&10@80&10&10%
Acme Cast Shears.....10&10%
Diamond Cast Shears.....10%
Clipper.....10&10%
Victor Cast Shears.....75&10@75&10&5%
Howe Bros. & Hulbert, Solid Forged Steel.....40%
Chicago Drop Forge & F. Co., Solid Steel Forged.....60%
Davenport Cutlery Co .....60@60&10%
Clauss Shear Co., Japanned.....70%
Clauss Shear Co., Nickeled, same list..60%
Galvanic, 3½ to 9 in,₩ doz, $1.00 ₩ inch

Pruning Shears and Hooks.

Disston's Combined Pruning Hook and Saw.....₩ doz $18.00, 20&10%
Disston's Pruning Hook, ₩ doz $12.00, 20&10%
E. S. Lee & Co.'s Pruning Tools.....40%
Pruning Shears, Henry's Pat, ₩ doz $3.75@4.00
Henry's Pruning Shears, ₩ doz $4.25@4.50
Wheeler, M. & C. Co.'s Combination, ₩ doz $12.00, 20%
Dunlap's Saw and Chisel,₩ doz $8.50, 30%
J. Mallinson & Co., No. 1, $5.25; No. 2 7.25
P., S. & W. Co.....60%

Tinners', &c.—

Shears and Snips (P. S. & W.).....20@25%
Snips, J. Mallinson & Co.....33⅓%

Sheaves—

Sliding Door—

M. W. Co., list July, 1888..50&10@60&5%
R. & E., list Dec. 18, 1885.....55&20%
Corbin's list.....60&10&2%
Patent Roller.....60&10&2%
Patent Roller, Hatfield's.....75%
Russell's Anti-Friction, list Dec. 18, 1885.....60&2%
Moore's Anti-Friction.....50%

Sliding Shutter—

R. & E. list Dec. 18, 1885 .....60&10&2%
Sargent's list.....60&10%
Reading list.....60&10&10%

Shells—

First quality 4, 8, 10 and 12 gauge 25&10&2%
First quality, 14, 16 and 20 gauge ($10 list).....30&10&2%
Prise.....40&2%
Star, Club, Rival and Climax brands, 33⅓&10&2%
Selbold's Comb. Shot Shells.....15&2%
Brass Shot Shells, 1st quality..... 60&2%
Brass Shot Shells, Club, Rival, Climax.. 65&2%

Shells Loaded—

Standard List, July 19, 1890..40&10&10%

Ship Tools—

L. & I. J. White.....20&5%

Shoes, Horse, Mule, &c.—

Horse—

Burden's, Perkins', Phoenix and Bryden's Boss, at factory. $4.00
Bryden's Frog Pressure, at factory.$5.00

Mule—

Add $1 ₩ keg to above prices.

Ox, Wrought—

Ton lots.....₩ ℔ 9¢
1000 ℔ lots.....₩ ℔ 9½¢
500 ℔ lots.....₩ ℔ 10¢

Shot—

	Ton lots	Small lots
Drop, up to BB, 25-℔ bag.	$1.43	$1.47
Drop, up to BB, 5-℔ bag.	.35	.36
Drop, BB and larger, 25-₩ bag	1.67	1.72
Drop, BB and larger 5-℔ bag	.40	.41
Buck and Chilled, 25-℔ bag	1.67	1.72
Buck and Chilled, 5-℔ bag	.40	.51
Dust Shot, 25-℔ bag	2.00	2.05
Dust Shot, 5-℔ bag	.45	.46

Shovels and Spades—

Ames' Shovels, Spades, &c., list Nov. 1, 1885.....20%
NOTE.—Jobbers frequently give 5@7½% extra on above.
Griffith's Black Iron.....50&10%
Griffith's C. S.....60@60&10%
Griffith's Solid C. S. R. R. Goods.....20%
St. Louis Shovel Co.....20@20&7½%
Hussey, Binns & Co.....15@25%
Hubbard & Co.....20@20&7½%
Lehigh Mfg. Co.....50&10%
H. M. Myers Co.....30 %
Payne Pettebone & Son.....33⅓&5%
Remington's (Lowman's Pat.)30&10@40%
Rowland's, Black Iron.....50&10%
Rowland's Steel.....60&5@60&10%

Shovels and Tongs—

Iron Head.....60&10@60&10&5%
Brass Head.....60&10&10%

Sieves—

Mann's Tin Rim.....50&25%
Buffalo Metallic, S. S. & Co.....50&25%
Shaker (Barler's Pat.) Flour Sifters.... ₩ doz $2.00; ₩ gr $21.60
Electric.....₩ gr $21.00
A. & W. Sifters.....₩ doz 2.00
Hunter's.....₩ doz $3.00
Smith's Adjustable Sifters .....₩ doz $2.00
Smith's Adjustable Milk Strainer. ₩ doz $2.00
Smith's Adjustable T. & C. Strainer. ₩ doz. $1.25

Sieves, Wooden Rim—

	Iron.	Plated.
Mesh 18, Nested, ₩ doz..	80¢	$1.00
Mesh 20, Nested, ₩ doz..	95¢	1.10
Mesh 24, Nested, ₩ doz..	$1.15	1.25

Skeins, Thimble—

Western list.....75&5@75&10%
Columbus Wrt. Steel..Special net prices
Coldbrookdale Iron Co.....60%
Seneca Falls Pattern 60%
Utica P. S. T. Skeins.....60%
Utica Turned and Fitted.....35%

Slates—

School, by case.....50&10@50&10&10%

Snaps, Harness, &c.—

Anchor (T. & S. Mfg. Co.).....65%
Fitch's (Bristol).....50&10%
Hotchkiss.....10%
Andrews.....50%
Sargent's Patent Guarded.....70&10&10%
German, new list.....40&10%
Covert.....50&10&5&2%
Covert, New Patent.....60&10&5&2%
Covert, New R. E.....60&10&5&2%
Covered Spring.....60&10&10%

Snaths, Scythe.

List.....60@..%

Soldering Irons—See Irons, Soldering.

Spittoons, Cuspidors, &c.

Standard Fiberware—

Cuspidors, 8½-inch, ₩ doz., No. 5, $8; No. 5X $9.
Spittoons, Daisy, 8-inch, No. 1, $4; 10 and 11 inch, $6.

Spoke Shaves—See Shaves, Spoke.

Spoke Trimmers—See Trimmers, Spoke.

Spoons and Forks—

Tinned Iron—

Basting, Cen. Stamp. Co.'s list....70&10%
Solid Table and Tea, Cen. Stamp. Co.'s list.....70&10%
Buffalo S. S. & Co... .....33⅓&2%

Silver-Plated—(4 mos. or 5% cash 30 days).

Meriden Brit. Co., Rogers.....40&15%
C. Rogers & Bros.....40&15%
Rogers & Bro.....40&15%
Reed & Barton.....40@40&5%
Wm. Rogers Mfg. Co.....40, 15&5%
Simpson, Hall, Miller & Co.....40, 15&5%
Holmes & Edwards Silver Co...40, 15&5%
L. Boardman & Son..... .....50&12½%

Miscellaneous.

Holmes & Edwards Silver Co.:
No. 67 Mexican Silver.....50&10&5%
No. 30 Silver Metal..... ....50&10&5%
No. 24 German Silver.....50&10&5%
No. 50 Nickel Silver.....50&5%
No. 49 Nickel Silver.....50&10&5%
Wm. Rogers Mfg. Co.
Rogers' Silver Metal.....50, 10&6%
18% Rogers' German Silver.....60&6%
22% Rogers' Nickel Silver. .. ....50&6%
German Silver.....50@50&5
German Silver, Hall & Elton..50&5% cash
Nickel Silver.....50&5@50&10&5% cash
Britannia.....60@60&5%
Boardman's N'ck'l Silver, list July 1, 1891 .....60⅔&5 % cash
Boardman's Britannia Spoons, case lots.....60&5% cash

Springs—

Door.—

Torrey's Rod, regular size....₩ doz $1.30
Gray's, ₩ gr., $20.00.....20%
Bee Rod ₩ gr., $20.00.....20%
Warner's No. 1, ₩ doz, $2.50; No. 2, $3.30.....40&10@50%
Gem (Coil), list April 19, 1886.....10%
Star (Coil), list April 19, 1886.....20%
Victor (Coil).....60@60&10%
Champion (Coil).....60&10@60&10&10%
Philadelphia, 5 in., $5.00; 8 in., $7.75.. %
Cowell's....No. 1, ₩ doz, $18.00; No. 2, $15.00.....50%
Rubber, complete, ₩ doz, $4.50...55&10%
Hercules.....50%
Shaw Door Check and Spring.25@30@35%

Carriage, Wagon, &c.—

Elliptic, Concord, Platform and Half Scroll.....60&10&10%
Cliff's Bolster Springs.....25%

Squares—

Steel and Iron..... } .80&10@80&10&10%
Nickel-Plated..... }
Try Square and T Bevels...60&10@60&10&10%
Disston's Try Square and T Bevels.....50%
Winterbottom's Try and Miter.....30&10%
Starrett's Micrometer Caliper Squares. 25%
Avery's Flush Bevel Squares.....40%
Avery's Bevel Protractor 50%

Squeezers.

Fodder.—

Blair's.....₩ doz $2.00
Blair's "Climax".....₩ doz $1.25

Lemon—

Porcelain Lined, No. 1....₩ doz $6.00, 25&30%
Wood, No. 2.....₩ doz $3.00, 35%
Wood, Common.....₩ doz $1.70@1.75
Dunlap's Improved ....₩ doz $3.75, 20%
Sammis....No. 1, $5.00; No. 2, $9; 12, $18 ₩ doz.....25&10%
Jennings' Star.....₩ doz $2.50
The Boss.....₩ doz $2.50
Dean's...Nos. 1, ₩ doz $5.50; 2, $3.35; 3, $1.90; Queen, $2.50
Little Giant.....50@50&5%
King.....40&5%
Hotchkiss Straight Flash....₩ doz $12.00
Silver & Co., Glass .....₩ gro. $9.00
Manny Lemon Juice Extractor:
Standard.....₩ doz $0.75@$1 00
Improved.....₩ doz $1.00

Standard Fiber Ware—See Ware, Standard Fiber.

Staples.

Blind—

Barbed, ½ in. and larger.....₩ ℔ 7@7½¢
Barbed, ¾ in. .....₩ ℔ 8@8½¢
Fence Staples, Galvanized. } Same price as Barb Wire. See Trd. Rep.
Fence Staples, Plain..... }

Steelyards.....40&10@50%

Stocks and Dies—

Blacksmith's
Waterford Goods.....40&10&10%
Butterfield's Goods.....40@40&10%
Lightning Screw Plate.....25@30%
Reece's New Screw Plates....33⅓&5@40%
Reversible Ratchet.....30 %
Gardner.....25%

Stops, Bench.

Morrill's.....₩ doz $9, 50%
Hotchkiss's.....₩ doz $5. 10@10&10%
Weston's, No. 1, $10; No. 2, $9.25&10&5%
McGill's.....₩ doz $3.....10%
Cincinnati.....25&10%

Stone—

Hindostan No. 1, 3¢; Axe, 3½¢; Slips No. 1, 4½¢
Sand Stone.....₩ ℔ 2½¢
Washita Stone, Extra.....₩ ℔ 22@23¢
Washita Stone, No. 1.....₩ ℔ 19@20¢
Washita Stone, No. 2.....₩ ℔ 12@13¢
Washita Slips, No. 1, Extra..₩ ℔ 44@46¢
Washita Slips, No. 1.....₩ ℔ 33@35¢
Arkansas Stone, No. 1, 4 to 6 in₩ ℔ $1.50
Arkansas Stone, No. 1, 6 to 9 in₩ ℔ $1.85
Turkey Oil Stone, 4 to 8 in.....₩ ℔ 40¢
Turkey Slips.....₩ ℔ $1.00@1.50
Lake Superior, Chase.....₩ ℔ 13¢
Lake Superior Slips, Chase.....₩ ℔ 20¢
Seneca Stone, Red Paper Brand....₩ ℔ 18@20¢
Seneca Stone, High Rounds..₩ ℔ 30@35¢
Seneca Stone, Small Whets..₩ gro $24.00

Stove Polish—See Polish, Stove.

Stretchers, Carpet.

Cast Steel, Polished.....₩ doz $2.25
Cast Iron, Steel Points.....₩ doz 80¢
Socket.....₩ doz $1.75
Tullard's.....25@25&10%

Strops, Razor—

Genuine Emerson.....60@60&5%
Imitation " ....₩ doz $2.00, 20@10&5%
Torrey's.....20%
Badger's Belt and Com.....₩ doz $2.00
Lamont Combination.....₩ doz $4.00
Jordan's Pat. Padded, list Nov. 1,'89.50%
Electric.....List net

Stuffers or Fillers, Sausage—

Miles' "Challenge," ₩ doz $20, 50@50&5%
Perry .....₩ doz, No. 1, $15.00; No. 0, $21.00.....50&5@50&10%
Draw Cut No. 4, each $30.00.....30%
Enterprise Mfg. Co.....20&10@30%
Silver's.....40&10%

Sweepers, Carpet.

Bissell No. 5.....₩ doz $17.00
Bissell No. 7 New Drop Pan.₩ doz $19.00
Bissell, Grand.....₩ doz $36.00
Grand Rapids.....₩ doz $24.00
Crown Jewel, No. 1, $18.00; No. 2, $19.00; No. 3, $20,00
Magic.....₩ doz $15.00
Jewel.....₩ doz $17.00
Improved Parlor Queen,
Nickeled..₩ doz $27.00
Japanned.....₩ doz $24.00
Excelsior .....₩ doz $22.00
Garland .....₩ doz $18.00
Parlor Queen.....₩ doz $24.00
Housewife's Delight.....₩ doz $15.00
Queen.....₩ doz $16.00
Queen, with band.....₩ doz $18.00
King .....₩ doz $30.00
Weed, Improved.....₩ doz $18.00
Hub.....₩ doz $16.00
Cog-Wheel.....₩ doz $16.00
Easy.....₩ doz $22.00
Excelsior .....₩ doz $22.00
Goshen.....₩ doz $21.00
Ladies' Friend.....₩ doz $15.00
Advance .....₩ doz $18.00
Supreme.....₩ doz $22.00

Tacks, Brads, &c.—

List October 19, 1889. Old established standard weights.

Carpet Tacks—
American, Blued 75%
American, Tin'd and Cop'd...77½%
Steel, Bright and Blue 1.....72½%
Steel, Tinned and Coppered.....75%
Swedes Iron, Blued.....72½%
Swedes Iron, Tinned 70%
American Iron Tacks, Domestic, 2½%
American Iron Tacks, Foreign...70%
Swedes Iron Tacks, S. S., Blue 1. 70%
Swedes Iron Tacks S. S., Tin'd..77½%
Swedes Iron Tacks, Lanc. Blued 66⅔%
Swedes Iron Tacks, Lanc. Tin'd 72½%
Gimp and Lace Tacks S.S., Blued.75%
Gimp and Lace T'ks, S. S., Tin'd.77½%
Gimp and Lace T'ks Lanc., Blu.66⅔%
Gimp & Lace T'ks, Lanc., Tin'd.72½%
Basket and Trimmers' T'ks, Lanc.66⅔%
Basket and Trimmers' T'ks S.S..70%
Hungarian Nails 66⅔%
Miners' Tacks, S. S 75%
Miners' Tacks, Lanc 70%
Common and Patent Brads.....66⅔%
Leathered Tacks.....70%
Brush Tacks.....50%
Looking-Glass Tacks.....50%
Picture-Frame Points.....50%
Finishing Nails.....66⅔%
Trunk and Clout Nails Black...66⅔%
Trunk and Clout Nails, Tinned or Coppered.....66⅔%
Basket Nails.....62½%
Chair Nails.....62½%
Cigar Box Nails.....50%
Tin Capped Nails.....50%

On some of the above goods extra 10 @10&5% is often given.

Regular discount 10&2½%, cash.

Miscellaneous—

Double-Pointed, 120 count.....55&10%
Wire Carpet Nails.....50&10%
Plymouth Rock Steel Carpet Tacks..25%
Wire Brads & Nails, see Nails, Wire.
Steel-Wire Brads, R. & E. Mfg. Co.'s list.....50&10%

Tapes, Measuring—

American.....40@40&5%
Spring.....40%
Chesterman's, Regular list.....25@30%

Thermometers—

In Case.....50@50&10%

Thimble Skeins—See Skeins.

Ties, Bale—Steel

Standard Wire, list.....50&10&5%

Tinners' Shears, &c.—See Shears, Tinners', &c.

Tinware—
Stamped, Japanned and Pieced, list Jan. 20 1887.....70&10@70&10&5%

Tire Benders, Upsetters, &c—
See Benders and Upsetters, Tire.

Tools.
Coopers'—
Bradley's.....20%
Barton's.....20@20&5%
L. & I. J. White.....20&5%
Albertson Mfg. Co.....25%
Beatty's.....30%
Sandusky Tool Co.....30@30&5%
Shaves, Cincinnati Tool Co.....20%
Lumber.
Ring Peavies, "Blue Line"...₱ doz $20.00
Ring Peavies, Common.....₱ doz $18.00
Steel Socket Peavies.....₱ doz $21.00
Mall. Iron Socket Peavies...₱ doz $19.00
Cant Hooks, "Blue Line"...₱ doz $16.00
Cant Hooks, Common Finish..₱ doz $14.00
Cant Hooks, Mall. Socket Clasp, "Blue Line" Finish.....$16.00
Cant Hooks, Mall. Socket Clasp, Common Finish.....₱ doz $14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish.....₱ doz $14.00
Cant Hooks, Clip Clasp, Common Finish.....₱ doz $12.00
Hand Spikes....₱ doz 6 ft., $15.00; 8 ft., $20.00
Pike Poles, Pike & Hook, ₱ doz., 12 ft., $11.50; 14 ft., $12.50; 16 ft., $14.50; 18 ft., $17.50; 20 ft., $21.50.
Pike Poles, Pike only, ₱ doz, 12 ft., $10.00; 14 ft., $11.00; 16 ft., $13.00; 18 ft., $16.00; 20 ft., $20.00.
Pike Poles, not ironed, ₱ doz, 12 ft. $6.00; 14 ft., $7.00; 16 ft., $9.00; 18 ft., $12.00; 20 ft., $16.00.
Setting Poles, ₱ doz, 12 ft., $14.00; 14 ft., $15.00; 16 ft., $17.00
Swamp Hooks.....₱ doz $18.00
Saw.
Atkins' Perfection.....₱ doz $12.00
Atkins' Excelsior.....₱ doz $6.00
Atkins' Giant.....₱ doz $4.00

Tobacco Cutters—See Cutters, Tobacco.

Transom Lifters—See Lifters, Transom.

Traps—
Game—
Newhouse.....40@40&5%
Oneida Pattern.....70&10%
Game, Blake's Patent.....40&10&5%
Mouse and Rat—
Mouse Wood, Choker, ₱ doz holes, 11@12¢
Mouse, Round Wire.....₱ doz $1.50, 10%
Mouse, Cage, Wire.....₱ doz $2.50, 10%
Mouse, Catch-'em-alive....₱ dz $2.50 15%
Mouse, Bonanza.....₱ doz 90 90@$1.00
Rat, Decoy.....₱ gr $10.00, 10%
Ideal.....₱ gr $10.00
Cyclone.....₱ gr $5.25
Hotchkiss Metallic Mouse, 5-hole traps, ₱ doz., 90¢; in full cases, ₱ doz.....75¢
Hotchkiss Imp. Rat Killer..₱ gro $18.50
Hotchkiss New Rat Killer...₱ gro $16.50
Schuyler's Rat Killer.....₱ gro $15.00

Triers—
Butter and cheese.....25%

Trimmers, Spoke.
Bonney's.....₱ doz $10.00, 50%
Stearns'.....20&10%
Ives', No. 1, $15.00; No. 2, $12.00 ₱ doz. 55&10%
Douglas'.....₱ doz $9.00, 20%
Cincinnati.....25%

Trowels—
Lothrop's Brick and Plastering, 20&10&5@35%
Reed's Brick and Plastering.....15%
Disston's Br'k and Plastering.....25%
Peace's Plastering.....25%
Clement & Maynard's.....20%
Rose's Brick.....15@20%
Brade's Brick.....25%
Worrall's Brick and Plastering.....20%
Garden.....70%

Trucks, Warehouse, &c.—
B. & L. Block Co.'s list, '82.....40%

Tubes, Boiler—
See Pipe.

Twine—

Flax Twine—	BC.	B.
No. 9, ¼ and ⅛ ℔ Balls	26¢	34¢
No. 12, ¼ and ⅛ ℔ Balls	25¢	33¢
No. 18, ¼ and ⅛ ℔ Balls	22¢	32¢
No. 24, ¼ and ⅛ ℔ Balls	22¢	32¢
No. 36, ¼ and ⅛ ℔ Balls	20¢	31¢

No. 264, Mattrass, ¼ and ⅛ ℔ Balls.52@54¢
Chalk Line, Cotton, ⅛ ℔ Balls.....25¢
Mason Line, Linen, ⅛ ℔ Balls.....55¢
2-Ply Hemp, ¼ and ⅛ ℔ Balls (Spring Twine).....15-½¢
3-Ply Hemp, 1 ℔ Balls.....16¢@16½¢
3-Ply Hemp, 1½ ℔ Balls.....15¢@15½¢
Cotton Wrapping, 5 Balls to ℔ ..15¢@16¢
2, 3, 4 and 5-Ply Jute, ⅛ ℔ Balls.....10¢
Wool.....6½¢@6¾¢
Paper.....13¢@14¢
Cotton Mops, 6, 9, 12 and 15 ℔ to doz..18¢

Vises—
Solid Box.....50&10@50&10&5%
Parallel—
Fisher & Norris Double Screw.....15&10%
Stephens'.....25@30%
Parker's.....20@25%
Wilson's.....55%
Howard's.....40%
Bonney's.....40&10%
Millers Falls.....40@40&10%
Trenton.....40&5@40&10%
Merrill's.....15@20%
Sargent's.....60&10&10%
Backus and Union.....40%
Double Screw Leg.....15&10%
Prentiss.....20@25%
Simpson's Adjustable.....40%
Moore's.....30%
Massey Quick Action.....20 @ 25 %
Saw Filers—
Bonney's, Nos. 2 & 3, $15.00.....40&10%
Stearn's.....33⅓&10@33⅓&10&10%
Stearn's Silent Saw Vises.....33⅓@35%
Sargent's.....66⅔&10%
Hopkins'.....₱ doz $17.50, 10%
Reading.....40&10%
Wentworth.....20&10%
Miscellaneous.
Combination Hand Vises.....₱ gr $42.00
Cowell Hand Vises.....20%
Bauer's Pipe Vises.....10%
Cincinnati.....25&10%
Enterprise Pipe Vises, each.....$3.00
Massey Combination Pipe.....40 %

Wads—Price per M.

J.M.C.&W.R.A.—B.E., 11 up..	68¢
J.M.C.&W.R.A.—B. E., 9&10..	82¢
J.M.C.&W.R.A.—B. E., 8.....	96¢
U.M.C.& W.R.A.—B. E., 7.....	$1.10
U.M.C.&W.R.A.—P. E., 11 up..	1.15
U.M.C.&W.R.A.—P. E., 9&10..	1.50
J.M.C.&W.R.A.—P. E., 8.....	1.70
J.M.C.&W.R.A.—P. E., 7.....	1.80
Eley's B. E., 11 up.....	$1.70@$1.75
Eley's P. E., 11@20.....	3.00@ 3.25

Dis. 20&2

Wagon Boxes—See Boxes, Wagon.

Washer Cutters—See Cutters Washer.

Wagon Jacks—See Jacks, Wagon.

Ware, Hollow, Enameled, &c.
Cast Iron, Hollow—
Stove Hollow-Ware—
Ground.....60&10%
Unground.....60&10&10%
White Enameled-Ware—
Maslin Kettles.....70&10@70&10&5%
Boilers and Saucepans.....50&10@50%
Tinned Boilers and S'pans.....50&10@60%
Rustless Hollow-Ware.....50@50&5%
Gray Enameled-Ware—
Stove.....50%
Maslin Kettles.....60&10&10%
Boilers and Saucepans.....40&5%
Enameled—
Agate and Granite Ware, list Jan. 1, 1889.....33⅓&10%
Ironclad Enameled Ware...dis 33⅓&10%
Kettles—
Galvanized Tea-Kettles—

Inch....	6	7	8	9
Each....	55¢	60¢		75¢

Standard Fiber—

	Per Dozen. Plain.	Dec'r'd
Wash-Basins, 10½ in.....	$2.00	$2.25
Wash-Basins, 12 in.....	2.25	2.75
Keelers, 11¼ in.....		4.0¢
Cuspidors.....		8.0¢
Spittoons, "Daisy," 8 in....	4.00	4.5¢
Peck Measure.....	4.00	
Half-peck Measure.....	3.50	

See also Pails.
Indurated Fiber—25%
Spittoons, No. 2, ₱ doz.....$8.40
Basins, Ringed, ₱ doz., No. 2.....$8.00
Washtubs, Nested, Nos. 0, 1, 2 and 3 (4 pieces), ₱ nest.....$7.50
Keelers Nested, Nos. 1, 2, 3 and 4 (4 pieces), ₱ nest.....$2.90
Butter Bowls 16, 17 and 19-Inch (3 pieces), ₱ nest.....$1.70
Liquid Measures, pt., qt., 2 qt. and funnell (4 pieces) ₱ set.....$1.60
See also Pails.
Silver Plated, Hollow—
4 mo. or 5 % cash in 30 days.
Reed & Barton.....
Meriden Britannia Co.....
Simpson, Hall, Miller & Co.....
Rogers & Brother.....
} 40&5%
Hartford Silver Plate Co.....
William Rogers Mfg. Co.....
} 40&5&5%

Washers—

Size hole.....	5-16	⅜	½	⅝ to 1⅜
Washers.....	6	5	3.50¢	3

In lots less than 200 ℔, ₱ ℔, add ¼¢, 5-lb boxes 1¢ to list.

Wedges—
Iron.....₱ ℔ 3½¢
Steel.....₱ ℔ 3½¢

Weights, Sash—
Solid Eyes.....₱ ton $18@$19

Well Buckets, Galvanized—See Buckets, Well, Galvanized.

Wheels, Well.
8 in., $2.25; 10 in., $2.70; 12 in., $3.2[illegible]

Wire and Wire Goods—
Iron—
Market.
Br. & Ann., Nos. 0 to 18.....77½%
Cop'd, Nos. 0 to 18.....75%
Galv., Nos. 0 to 18.....67½%
Tin'd, Tinned list Nos. 0 to 18.....67½%
Stone,
Br. and Ann'd, Nos. 16 to 18.....77½%
Bright and Ann'd, Nos. 19 to 26.....80%
Br. and Ann'd, Nos. 27 to 36.....82½%
Tinned.....
Tinned Broom Wire, 18 to 21, ₱ ℔.....5¢
Galvanized Fence, Nos. 8 and 9.....70%
Brass, list Jan. 18, 1884.....35%
Copper, list Jan. 18, 1884.....35%
Annealed Wire on Spools.....55%
Mallin'sSteel and Tin'd on Spools.....55%
Mallin's Brass and Con. on Spools.....45%
Tate's Spooled, Tinned and Annealed.55%
Tate's Spooled Cop. and Brass.....45%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to 2, 30%
Steel Music Wire, 12 to 30...60@70¢ ₱ ℔
Wire Clothes Lines, see Lines.
Wire Picture Cord see cord.
Bright Wire Goods—
Standard list.....80&10%
Wire Cloth and Netting.
Painted Screen Cloth, good quality, ₱ 100 sq. ft., $1.40
Galvanized Wire Netting.....70&10@75%

Wire, Barb.
F.o.b. cars Pittsburgh and Cleveland, $2.75 ₱ cwt. for Painted, $3.25 for Galvanized.
5¢ ₱ cwt. advance on above f.o.b. cars Cincinnati and Allentown, Pa
10¢ ₱ cwt. advance for f.o.b. cars Joliet and Chicago.
15¢ ₱ cwt. advance for f.o.b. cars St. Louis.
33¢ ₱ cwt. advance for f.o.b cars Omaha.
35¢ ₱ cwt. advance for f o b cars Lawrence, Kan.
$1.25 ₱ cwt. advance for f.o.b. cars San Francisco.

Wire Rope—See Rope, Wire.

Wrenches—
American Adjustable.....40%
Baxter's Adjustable "S".....40&10@50%
Baxter's Diagonal.....40&10@50%
Coes' Genuine.....50&3%
Coes' "Mechanics".....50&10&3%
Girard Standard.....65&10%
Lamson & Sessions' Engineers'..60&10%
Lamson & Sessions' Standard..70&10%
P. S. & W. Agricultural.....
Girard Agricultural.....
Lamson & Sessions' Agric'l..
} 75&10@75 10&5%
Bemis & Call's
Pat. Combination.....35%
Merrick's Pattern.....35%
Brigg's Pattern.....25%
Cylinder or Gas Pipe.....40&5%
No. 3 Pipe.....40&10%
Aiken's Pocket (Bright).....$6.00, 50&10%
The Favorite Pocket.....₱ doz $4.00, 40%
Webster's Pat. Combination.....25%
Boardman's.....20&10%
Always Ready.....25&5%
Alligator.....50%
Donohue's Engineer.....20&10%
Acme, Bright.....50&3%
Acme, Nickeled.....40&3%
Hercules.....70%
Walker's.....55&3%
Diamond Steel.....55&3%
Cincinnati Brace Wrenches.....35&10%
Tafts' Vise Wrench.....55&10&3%

Wringers, Clothes—
Am. Wringer Co.'s list, July 15, 91..2% cash

Wrought Goods—
Staples, Hooks, &c., list Jan. 12, 1886, 85@85&10%

PAINTS, OILS AND COLORS.—Wholesale Prices.

Animal and Vegetable Oils.

Linseed, City, raw..per gal.	42	@	..
Linseed, City, boiled.....	45	@	..
Linseed, Western, raw.....	40	@	..
Lard, City, Extra Winter..	58	@	..
Lard, City, Prime.....	56	@	57
Lard, City, Extra No. 1.....	42½@		45
Lard, City, No. 1.....	37½@		40
Lard, Western, prime.....	55	@	..
Cotton-seed, Crude, prime.	..	@	30
Cotton-seed, Crude, off grades.....	25	@	28
Cotton-seed, Summer Yellow, prime.....	38	@	39
Cottonseed, Summer Yellow, off grades.....	32	@	36
Sperm, Crude.....	.	@	70
Sperm, Natural Spring.....	..	@	..
Sperm, Bleached Spring....	..	@	..
Sperm, Natural Winter.....	73	@	75
Sperm, Bleached Winter...	78	@	80
Whale, Crude.....	..	@	45
Whale, Natural Winter.....	54	@	56
Whale, Bleached Winter...	56	@	58
Whale, Extra Bleached.....	58	@	60
Sea Elephant, Bleached Winter.....	63	@	64
Menhaden, Crude, Sound...	..	@	30
Menhaden, Crude, Southern	..	@	..
Menhaden, Light Pressed..	31	@	32
Menhaden, Bleached W'ter.	33	@	34
Menhaden, Extra Bleached	35	@	36
Tallow, City, prime.....	4¾	@	..
Tallow, Western, prime....	..	@	..
Cocoanut, Ceylon.....	6¼@		6¾
Cocoanut, Cochin.....	7¼@		7½
Cod, Domestic	32	@	33
Cod, Foreign.....	..	@	..
Red Elaine.....	36	@	38
Red Saponified.....₱ ℔	5	@	5¼
Bank.....per gal	29	@	..
Straits.....	30	@	..
Olive, Italian, bbls.....	63	@	68
Neatsfoot, prime.....	55	@	65
Palm, prime, Lagos....₱ ℔	6	@	6½

Mineral Oils.

Black, 29 gravity, 25 @ 30 cold test.....per gal	7½@		8
Black, 29 gravity, 15 cold test.....	8½@		9
Black, 29 gravity, summer.	6¾@		7
Cylinder light, filtered....	15	@	20
Cylinder, dark, filtered	12	@	15
Cylinder, dard, st'm refined	10	@	15
Paraffine, 23½ @ 24 gravity.	13½@		14
Paraffine, 25 gravity.....	12½@		13
Paraffine, 28 gravity.....	9½@		10
Paraffine, red, 21 @ 22 gr'ty	..	@	..
Paraffine, red, 22½@23 gr'ty	13	@	14

Paints and Colors.

Barytes, Foreign, ₱ ton.	$22.00	@	24.00
Barytes, Amer. floated...	30.00	@	32.00
Barytes, Amer. No. 1....	19.00	@	20.00
Barytes, Amer. No. 2....	13.00	@	16.00
Barytes, Amer., No. 3....	11.00	@	12.00
Blue, Celestial.....₱ ℔	6	@	8
Blue, C hinese	50	@	55
Blue Prussian.....	25	@	40
Blue, Ultramarine	8	@	25
Brown, Spanish	½@		1
Brown, Vandyke, Amer..	3	@	3½
Brown, Vandyke, English	6	@	8
Carmine, No. 40, in bulk.	3.10	@	..
Carmine, No. 40, in boxes or barrels	3.20	@	..
Carmine, No. 40, in ounce bottles.....	4.20	@	..
Chalk, in bulk.....₱ ton.	..	@	2.00
Chalk, in bbls.,₱ 100 ℔.	55	@	40
China Clay, English.....₱ ton.	13.00	@	18.00
Cobalt Oxide, prep'd.....	2.90	@	....
Cobalt Oxide, black..... lots 100 ℔ 3.60		@	....
Cobalt, Oxide, black..... less 100 ℔ 3.65		@	....
Green, Paris, in bulk.....	14	@	15½
Green Paris, 170 @ 175 ℔ kegs.....	14½@		15¾
Green, Paris, small pack.	16	@	21¾
Green, Chrome, ordinary	8	@	11
Green, Chrome, pure....	22	@	25
Lead, Eng., B.E. white....	8½@		10
Lead, Amn. White, dry or in oil: Kegs, lots less than 500 ℔....		@	7½
Kegs, lots 500 ℔ to 5 tons....		@	7
Kegs, lots 5 tons to 12 tons..		@	6¾
Kegs, lots 12 tons and over..		@	6¾
Lead White in oil 25 ℔ tin pails add to keg price.....		@	⅛
Lead, White, in oil, 12½ ℔ tin pails, add to keg price		@	1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price.		@	2½
Lead, Red, bbls. and ⅛ bbls....	6½	@	7½
Lead, Red, kegs.....	6¾	@	7¾
Litharge, kegs.....	6¾	@	7½
Litharge, bbls. and ½ bbls....	6¼	@	7¼

TERMS, &c.—Lead and Litharge.—On lots of 500 ℔ or over, 60 days' time or 2½ % discount for cash if paid within 15 days of date of invoice.

Ocher, Rochelle.....	1.35	@	1½
Ocher, French Washed.....	1½@		2½
Ocher, German Washed...	1½@		3
Ocher, American.....	½@		1½
Orange Mineral, English...	9	@	9½
Orange Mineral, French....	10	@	10½
Orange Mineral, German ..	9½@		10
Orange Mineral, American..	8	@	8½
Paris White, English Cliffstone.....	1.00	@	1.15
Paris White, American.....	70	@	75
Red, Indian, English.....	5½@		7
Red, Indian, American....	2	@	6½
Red, Turkey.....	9	@	14
Red, Tuscan	9	@	11
Red, Venetian, American.. ₱ 100 ℔.	1.00	@	1.25
Red, Venetian, English....	1.00	@	1.50
Sienna, Italian, Burnt and Powd.₱ ℔	5	@	6¼
Sienna, Ital., Burnt Lumps	1½@		3½
Sienna, Ital., Raw, Powd..	5	@	6¾
Sienna, Ital., Raw Lumps..	3	@	3½
Sienna, American, Raw....	1½@		1¾
Sienna, American, Burnt and Powdered.....	1½@		1¾
Talc, French	1¾@		1¾
Talc, American.....	1	@	1¼
Terra Alba, Fr'ch. ₱ 100 ℔	50	@	1.00
Terra Alba, English	50	@	60
Terra Alba, American No.1	70	@	75
Terra Alba, American No.2	40	@	50
Umber, Turkey, Bnt. and Powd.,..... ₱ ℔	3½@		4
Umber, Turkey Bnt.Ln	2½@		3
Umber, Turkey, Raw and Powdered.....	3½@		
Umber Turkey, R'w Lmps	2½@		3¾
Umber, Turkey, Bnt. Amer.	1½@		1¾
Umber, Turkey, R'w Amer.	1½@		1¾
Yellow, Chrome.....	10	@	25
Vermilion Americ. Lead..	11½@		17
Vermilion, Quicks'er, bulk.	64	@	66
Vermilion, Quicks'er, bags.	65	@	67
Vermilion Quicksilver, smaller pkgs.....	69	@	71
Vermilion English Import	80	@	85
Vermilion, Imitation, Eng.	8	@	25
Vermilion Trieste.....	87½@		90
Vermilion, Chinese.....	90	@	95
Whiting, Common. ₱ 100 ℔	40	@	45
Whiting, Gilders'.....	50	@	55
Zinc, American, dry....₱ ℔	4½@		5
Zinc, French, Red Seal.....	..	@	8½
Zinc, French, Green Seal..	..	@	8½
Zinc, French, V. M. X.....	..	@	7
Zinc, Antwerp, Red Seal....	..	@	7½
Zinc, Antwerp, Green Seal	..	@	8½
Zinc, German, L. Z. O....	..	@	6¾
Zinc, V M. in Poppy Oil, G. Seal, lots of 1 ton and over.....	10¾@		11¼
lots less than 1 ton	11	@	11¾
Zinc, V. M. in Poppy Oil, Red Seal,.....	..	@	..
lots of 1 ton and over....	10	@	10½
Lots of less than 1 ton....	10½@		10¾

DISCOUNTS.—French Zinc.—Discounts to buyers of 10- bbl. lots of one or assorted grades, 1 %; 25 bbls, 2 %, 50 bbls, 4 %. No discount allowed on less than bbl. lots.

Colors in Oil.

Blue, Chinese.....₱ ℔	35	@	40
Blue, Prussian.....	29	@	45
Blue, Ultramarine.....	12	@	18
Brown, Vandyke.....	7	@	12
Green, Chrome.....	8	@	13
Green, Paris.....	16	@	18½
Sienna, Raw.....	7	@	14
Sienna, Burnt.....	7	@	14
Umber Raw.....	7	@	10
Umber, Burnt	7	@	10

Putty.

In wooden pails.....	....	@	.01¾
In tin cans.....	.02	@	.02¾
In bladders.....	.0[illegible]	@	.02¾

Spirits Turpentine.

In regular bbls.....	36½@		..
In machine bbls.....	37½@		..

Glue.

Low Grade.....₱ ℔	8	@	10
Cabinet.....	12	@	14
Medium White.....	13	@	15
Extra White.....	17	@	20
French	10	@	22
English.....	10	@	15
Irish.....	12	@	..

CURRENT METAL PRICES.

SEPTEMBER 9, 1891.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market reports.

IRON AND STEEL.

Bar Iron from Store.

Common Iron: ⅜ to 2 in. round and square.. 1 to 6 in. x ⅜ to 1 in.....	₩ lb 2.00 @ 2.10¢
Refined Iron: ⅜ to 2 in. round and square.. 1 to 4 in. x ⅜ to 1½ in..... 4½ to 6 in. x ⅜ to 1 in.....	₩ lb 2.10 @ 2.30¢
1 to 6 in. x ¼ and 5-16	₩ lb 2.30 @ 2.50¢
Rods—⅝ and 11-16 round and sq..	₩ lb 2.20 @ 2.40¢
Bands—1 to 6 x 3-16 to No. 12....	₩ lb 2.40 @ 2.60¢
"Burden Best" Iron, base price..	₩ lb..... 3.00¢
Burden's "H. B. & S." Iron, base price.....	₩ lb..... 2 80¢
"Ulster".....	₩ lb..... 3.00¢
Norway Bars	4.00¢
Norway Shapes.....	5.00¢

Merchant Steel from Store.

	Per pound.
Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots.....	2¾¢
Best Cast Steel, base price in small lots	8 ¢
Best Cast Steel Machinery, base price in small lots.....	5¢

Sheet Iron from Store.

	Common American.	R. G.	Cleaned.
10 to 16.....₩ lb	3.00 @ 3.00¢	3.35 @	.....¢
17 to 20.....₩ lb	3.15 @ 3.25¢	3.35 @	3.75 ¢
21 to 24.....₩ lb	3.35 @ 3.35¢	3.50 @	.....¢
25 and 26....₩ lb	3 35 @	3.60 @	.....¢
27..... ...₩ lb	3.50 @ 3.62½¢	3.85 @	.....¢
28.....₩ lb	3.65 @ .....¢	4.10 @	.....¢
	B. B.		2d qual.
Galv'd, 14 to 20, ₩ lb.	4.75 @ ...	4.60 @	.....¢
Galv'd, 21 to 24, ₩ lb.	5.12 @ ...	5.00 @	.....¢
Galv'd, 25 to 26, ₩ lb.	5.50 @ ...	5.35 @	.....¢
Galv'd, 27..... ₩ lb.	5 90 @ ...	5.70 @	.....
Galv'd, 28..... ₩ lb.	6.25 @ ...	6.10 @	. . .¢
Patent Planished.....	₩ lb A 10¢		B, 9¢
Russia.....	₩ lb	10½¢ @ 11¢	
American Cold Rolled B. B.....	₩ lb	5¢ @ 7¢	
Craig Polished Sheet Steel.....	₩ lb,	8½¢	

English Steel from Store.

Best Cast	₩ lb 15 ¢
Extra Cast	₩ lb 16½ @ 17 ¢
Swaged, Cast.....	₩ lb 15 ¢
Best Double Shear.....	₩ lb 15 ¢
Blister, 1st quality.....	₩ lb 12 ¢
German Steel, Best.....	₩ lb 10 ¢
2d quality.....	₩ lb 9 ¢
3d quality	₩ lb 8 ¢
Sheet Cast Steel, 1st quality.....	₩ lb 15 ¢
2d quality.....	₩ lb 14 ¢
3d quality.....	₩ lb 12½¢
R. Mushet's "Special"	₩ lb 48 ¢
" " "Titanic".....	₩ lb 20 ¢

METALS.

Tin.

	Per lb
Banca, Pigs.....	23¾¢
Straits, Pigs.....	22¢
Straits in Bars	24¢

Tin Plates.

Charcoal Plates.—Bright.

		Per box.
Melyn Grade.....IC, 10 x 14..	@	$6.75
" " ... .IC, 12 x 12..	@	7 00
" " ..... IC, 14 x 20..	@	6.75
" " .....IC, 20 x 28..	@	13 70
" " ....IX, 10 x 14.. ...	@	8 25
" " ....IX, 12 x 12..	@	8.50
" " ..... . IX, 14 x 20..	@	8 25
" " .....IX, 20 x 28..	@	16 50
" " .....DC, 12½ x 17..	@	6 25
" " .....DX, 12½ x 17..	@	7 75
Oalland Grade.....IC, 10 x 14..	@	6.70
" " .....IC, 12 x 12..	@	6 95
" " .....IC, 14 x 20..	@	6.60
" " .....IX, 10 x 14..	@	7.85
" " . ....IX, 12 x 12..	@	8 20
" " .....IX 14 x 20.	@	7.85
Allaway Grade.....IC, 10 x 14..	@	6.35
" " .. ...IC, 12 x 12..	@	6.50
" " .....IC, 14 x 20..	@	6.35
" " .....IC, 20 x 28..	@	12.40
" " .....IX. 10 x 14..	@	7.50
" " . ....IX, 12 x 12..	@	7.80
" " .....IX, 14 x 20..	@	7.50
" " .....IX, 20 x 28..	@	15.00
" " ...DC, 12½ x 17..	@	6.80
" " ...DX 12½ x 17.. 6.00	@	7.00

Coke Plates.—Bright.

Steel Coke.—IC, 10 x 14, 14 x 20,.	@	$5 70
10 x 20..	@	8 10
20 x 28,.	@	11.70
IX, 10 x 14, 14 x 20..	@	6.60
BV Grade.—IC, 10 x 14, 14 x 20..	@	5.70

Charcoal Plates.—Terne.

Dean Grade.—IC, 14 x 20..	@	$5.45
20 x 28.	@	10.60
IX, 14 x 20.....	@	6 20
20 x 28.....	@	12.35
Abecarne Grade.—IC, 14 x 20...	@	5.25
20 x 28...	@	10.60
IX, 14 x 20....	@	6.35
20 x 28.	@	12.35

Tin Boiler Plates.

IXX, 14 x 26.....112 sheets.....	@	$13.50
IXX, 14 x 28.....112 sheets....	@	13.75
IXX, 14 x 31.... ....112 sheets	@	15.25

Copper.

DUTY: Pig, Bar and Ingot, 1½¢; Old Copper, 1¢ ₩ lb. Manufactured (including all articles of which Copper is a component of chief value), 35 % ad valorem.

Ingot

Lake...	@ 13 ¢
Ansonia Grade Arizona	@ 12½¢
Ansonia Grade Casting	@ 12 ¢

Sheet and Bolt.

Prices adopted by the Association of Copper Manufacturers of the United States, December 5, 1890, being quotations for all sized lots.

Not wider than	Not longer than	And longer than	Weights per square foot and prices per pound. Over 64 oz.	32 to 64 oz.	16 to 32 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
30	72		22	22	22	23	24	25	28	30
30	72		22	22	22	23	25	27	31	....
36	96		22	22	22	24	26	30	33	....
36	96		22	22	23	25	27	31	35	....
48	96		22	22	24	26	28	32	....	....
48	96		22	22	25	27	29	33	....	....
50	96		22	22	27	29	34	....	....	....
60	96		22	23	28	....	....	....	....	....
84	96		23	24	....	....	....	....	....	....
84	96		24	25	....	....	....	....	....	....
Over 84 in. wide			25	27	...	....	....	....	....	....

All Bath Tub Sheets....	16 oz.	14 oz.	12 oz.	10 oz.	
Per pound.....	$0.27	0.29	0.31	0.35	
Bolt Copper, ⅝ inch diameter and over, per pound.....					22¢

Circles, 60 inches in diameter and less, 3 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Copper Bottoms, Pits and Flats.

	Per pound.
14 ounce to square foot and heavier.....	26¢
12 ounce and up to 14 ounce to square foot.....	27¢
10 ounce and up to 12 ounce.....	29¢
Lighter than 10 ounce.....	32¢

Circles less than 8 inches diameter 2 cents per pound additional.

Circles over 13 inches diameter are not classed as Copper Bottoms.

Tinning.

Tinning sheets on one side, 10, 12 and 14 x 48 each.....	8¢
Tinning sheets on one side, 30 x 60 each.....	30¢
For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each.	15¢
For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each	12¢
For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.) each.....	12¢
Tinning sheets on one side, other sizes, per square foot.....	2½¢

For tinning both sides double the above prices.

Planished Brass and Copper.

14 x 48, 14 x 52, 14 x 56, 14 x 60 in.

14 and 16 oz. and heavier..33¢. By the case...32¢ ₩ lb
12 oz. and lighter.....35¢. By the case...34¢ ₩ lb
24 x 48 and 30 x 60.
14 and 16 oz. and heavier..36¢. 12 oz.....39¢ ₩ lb

Seamless Brass and Copper Tubes.

O. G.	N. G.	⅜	½	⅝	¾	⅞	1	1¼
8-14	6-12	37	33	30	29	28	27	24
15	13	38	34	31	30	29	28	25
16	14	39	34	32	31	30	29	25
17	15	40	35	33	30	31	30	26
18	16	42	36	34	32	31	30	27
19	17	43	37	35	34	33	32	29
20	18-19	44	39	37	36	35	34	31
21	20	46	41	39	38	37	36	34
22	21	48	42	40	39	38	37	36
23	22	50	44	42	41	40	39	39
24	23	53	46	44	43	41	40	41
25	24	56	49	46	45	44	43	45

Copper Bronze and Gilding Tube, 3¢ ₩ lb additional.

Brazed Brass Tubing. (To No. 20, inclusive.

Above 5-16 inch to 3 inch, inclusive	35¢
Plain, above 3 inch.....	45¢
Plain, 5-16 inch.....	45¢
Plain, ¼ inch.....	60¢
Plain, 3-16 inch.....	$1.05
Plain, ⅛ inch.....	1.50
Fancy Tubing, Brass, to No. 20, inclusive.....	35¢ ₩ lb
Bronze Tubing, 3¢ ₩ lb more than Brass.	
Discount from list....	25 @ ..%

Roll and Sheet Brass.

(Brown & Sharpe Standard Gauge.)

Common High Brass: Wider than and including	in. 2 10	in. 10 12	in. 12 14	in. 14 16	in. 16 18	in. 18 20	in. 20 22	in. 22 24
To No. 20, inclusive...	.21	.22	.23	.25	.27	.29	.31	.33
Nos. 21, 22, 23 and 24.	.22	.23	.24	.26	.28	.30	.32	.34
Nos. 25 and 26.....	.22½	.23⅝	.24⅝	.27	.29	.31	.33	.35
Nos. 27 and 28..... ...	.23	.24	.25	.28	.30	.32	.34	.36

Common High Brass: Wider than and including	in. 24 26	in. 26 28	in. 28 30	in. 30 32	in. 32 34	in. 34 36	in. 36 38	in. 38 40
To No. 20, inclusive...	.36	.39	.42	.46	.50	.55	.60	.65
Nos. 21, 22, 23 and 24..	.37	.40	.43	.47	.51	.56	.61	.68
Nos. 25 and 26.....	.38	.41	.44	.48	.52	.57	.63	.71
Nos. 27 and 28.....	.39	.42	.45	.49	.53	.58	.65	.75

Brass and Copper Wire.

Old English guage standard.	Com. high brass. Per lb.	Low brass. Per lb.	Gildi'g br'ze & copper Per lb
All Nos. to No. 16, inclusive....	$0.22	$0 26	$0.30
No. 17 and No. 18.....	.23	.27	.31
No. 19 " " 20.....	.24	.28	.32
No. 21.....	.25	.29	.33
No. 22.....	.26	.30	.34
No. 23.....	.28	.32	.36
No. 24.....	.30	.34	.38
No. 25.....	.32	.36	.40
No. 26.....	.35	.39	.43
No. 27.....	.38	.42	.46
No. 28.....	.42	.46	.51
No. 29.....	.45	.49	.54
No. 30.....	.48	.52	.62
No. 31.....	.51	.55	.67
No. 32.....	.55	.59	.73
No. 33.....	.59	.63	.82
No. 34.....	.64	.68	.95
No. 35.....	.70	.74	1.30
No. 36.....	.76	.80	1.50
No. 37.....	1.00	1.04	1.70
No. 38.....	1.30	1.34	2.00
No. 39.....	2.00	2.00	3.25
No. 40.....	2.60	2.60	5.75

Spring Wire, 2¢ ₩ lb advance.

Copper Belt and Hose Rivets and Burrs.

	Per lb.		Per lb.
No. 5.....	49¢	No. 11.....	56¢
No. 6.....	49¢	No. 12.....	58¢
No. 7.....	49¢	No. 13.....	60¢
No. 8...	50¢	No. 14.....	65¢
No. 9.....	52¢	No. 15.....	70¢
No. 10.....	54¢		

Tobin Bronze—Rods.

¼ inch and larger.....17¢ ₩ lb, net

Tobin Bronze—Piston Rods.

1½ inch and smaller.....18¢ ₩ lb, net
Over 1½ inch.....20¢ ₩ lb, net

Spelter.

Duty: Pig, Bars and Plates, $1.50 ₩ 100 lb.

Western Spelter	5½¢ @ 6 ¢
Bertha (pure)	8¼¢ @ 9 ¢

Zinc.

Duty; Sheet, 2½¢ ₩ lb.

600 lb casks.....	7¼¢
Per lb	7¾¢

Lead.

Duty: Pig, $2 ₩ 100 lb. Old Lead, 2¢ ₩ lb. Pipe and Sheets, 2½¢ ₩ lb.

American	4¾¢ @ 5¢
Bar.....	5 ¢ @ 5¼¢
Pipe, subject to trade discount....	7¢
Tin-Lined Pipe, subject to trade discount....	15¢
Block Tin Pipes, subject to trade discount....	37½¢
Sheet, subject to trade discount.....	7¾¢

Solder.

½ @ ½ (Guaranteed)...	14¢
No. 1.....	12¢
Extra Wiping.....	11½¢ @ 13¢

The prices of the many other qualities of Solder in the market indicated by private brands vary according to composition.

Antimony.

Cookson..... ₩ lb	@ 14 ¢
Hallett's. ..... "	@ 12½¢

ALUMINUM.

Prices in Ingots.

In lots of 2000 lb and over.....₩ lb .50¢

Old Metals.

(Prices Paid in New York.

Heavy Copper.....	₩ lb	13 ¢
Light Copper.....	₩ lb	11 ¢
Heavy Brass.....	₩ lb	10 ¢
Light Brass.....	₩ lb	8 ¢
Lead.....	₩ lb	4 ¢
Tea Lead.....	₩ lb	3½¢
Zinc.....	₩ lb	3 ¢
No. 1 Pewter.....	₩ lb	16 ¢
No. 2 Pewter.....	₩ lb	8 ¢
Wrought Scrap Iron.....	₩ gross ton	$19.00
Heavy Cast Scrap.....	₩ gross ton	12.00
Stove Plate Scrap.....	₩ gross ton	8.00
Burnt Iron.....	₩ gross ton	6.00